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THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Apr. 13, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,125,412, Re. S.N. 520,754, Filed Aug. 8, 1984, Cl. 106/300, PROCESS FOR THE PRODUCTION OF DURABLE TITANIUM DIOXIDE PIGMENT, William A. West, Owner of Record: *E. I. du Pont Denemours and Co., Wilmington, Del.,* Attorney or Agent: Theodore C. Gregory, Ex. Gp.: 113

4,262,482, Re. S.N. 332,364, Filed June 21, 1982, Cl. 431, APPARATUS FOR THE PREMIXED GAS PHASE COMBUSTION OF LIQUID FUELS, Gerald Roffe, et al., Owner of Record: *Invenior,* Attorney or Agent: None, Ex. Gp.: 345

4,311,640, Re. S.N. 611,733, Filed May 18, 1984, Cl. 260/112.5, PEPTIDE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF, Yoshio Kuroda, et al., Owner of Record: *Fujisawa Pharmaceuticak Co. Ltd., Osaka, Japan,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 123

4,332,375, Re. S.N. 608,277, Filed May 8, 1984, Cl. 271/9, COPY SHEET-FEEDING APPARATUS, Shuzo Tsubo, Owner of Record: *Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan,* Attorney or Agent: James R. Longacre, Ex. Gp.: 314

4,334,138, Re. S.N. 612,105, Filed May 18, 1984, Cl. 219/64, METHOD OF ELECTRIC WELDING TINFREE CANS, Kenji Matsuno, et al., Owner of Record: *Toyo Seikan Kaisha, Ltd., Tokyo, Japan,* Attorney or Agent: Martin A. Farber, Ex. Gp.: 213

4,422,961, Re. S.N. 610,734, Filed May 14, 1984, Cl. 502/301, RAVEY ALLOY METHANATION CATALYST, Thomas J. Gray, Owner of Record: *Olin Corp., New Haven, Conn.,* Attorney or Agent: Donald F. Clements, Ex. Gp.: 116

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,805,532, Reexam. No. 90/000,598, Requested: July 30, 1984, Cl. 405/264, CO NSOLIDATION OF AGGREGATE MATERIAL, John F. Kistner, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Alexander, Sell, et al., Ex. Gp.: 351, Requester: JPA Division of Geo. J. Ball, Inc., West Chicago, Ill.

4,033,105, Reexam. No. 90/000,591, Requested: July 12, 1984, Cl. 57/77.4, YARN PROCESSING, David Leslie McNeight, et al., Owner of Record: *Rieter Scragg Ltd., Langley, MacClesfield, England,* Attorney or Agent: Oblon, Fisher, et al., Ex. Gp.: 240, Requester: Owner

4,040,645, Reexam. No. 90/000,600, Requested: Aug. 3, 1984, Cl. 280/803, SEAT-BELT APPARATUS, William McAlpin Giffen, et al., Owner of Record: *Auto Restraint Systems Ltd., London, England,* Attorney or Agent: Elliott I. Pollock, Ex. Gp.: 316, Requester: Thomas R. Nesbitt, Jr., New York, N.Y.

4,267,448, Reexam. No. 90/000,602, Requested: Aug. 3, 1984, Cl. 250/281, ION DETECTOR WITH BIPOLAR ACCELERATING ELECTRODE, Karl Feser, et al., Owner of Record: *Finnigan Mat GmbH., Bremen 14, Germany,* Attorney or Agent: William J. Egan, III, Ex. Gp.: 256, Requester: Owner

4,370,566, Reexam. No. 90/000,599, Requested: July 30, 1984, Cl. 307/141, APPLIANCE CONTROL SYSTEM, Leroy A. Perry, et al., Owner of Record: *Emhart Ind, Inc., Farmington, Conn.,* Attorney or Agent: Meyer & Gomes, Ex. Gp.: 210, Requester: Scott & Fetzer Co., Westlake, Ohio

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Restriction Policy and Practice

The purpose of this notice is to inform the public of the results of the survey that was conducted on restriction requirements made under 35 U.S.C. 121 in the Patent Examining Groups and to report clarifications that have been implemented as a result of a review of restriction policy and practice.

The survey involved about 320 patent applications in which a restriction only Office action had been prepared by an examiner in the period between July—Sept. 1983. The selection of applications was proportioned among

Groups according to the volume of restriction requirements during the period. The statistics collected (Appendix A) and the definitions (Appendix B) for each item on the survey form are provided at the end of this notice.

Some of the significant findings of the survey include:

- 19% (61/320) of the requirements surveyed were not reasonable based on a review of the record
- 35% (88/249) of the requirements surveyed (not involving an election of species) were not supported by any reasons, or contained reasons which were clearly inapplicable to the facts
- 41% (53/128) of the actions following an election and traverse did not address the arguments contained in the traverse
- 91% (48/53) of a sample of 53 applications surveyed —the attorney or agent of record had no record of receiving a telephone call requesting an oral election

In response to the results of this survey, existing guidelines in Chapter 800 of the Manual of Patent Examining Procedure (MPEP) have been reviewed with each examiner and supervisor in the Patent Examining Corps in order to promote uniformity of practice and compliance with existing guidelines. A follow-up survey will be conducted in early 1985. In addition, as a result of a review of our existing policy and guidelines, the following clarifications have been made:

(1) Telephone Practice (MPEP 812.01) -

Except in those cases where the requirement for restriction is complex, the application is being prosecuted by the applicant pro se, or the examiner knows from past experience that an election will not be made by phone, the examiner should make a telephone call to the attorney or agent of record and request an oral election in accordance with MPEP 812.01, first paragraph.

If an election cannot, or will not, be made orally at the time of the call or within a reasonable time thereafter, generally three working days, the Office action requiring the election in writing should contain the following sentence

"A telephone call was made to (name of attorney or agent) on (date) to request an oral election to the above restriction requirement, but did not result in an election being made."

(2) Multiple Inventions In A Continuing Application

Where claims to multiple inventions within the meaning of 35 U.S.C. 121 are presented in a continuing application (continuation, division, continuation-in-part including those which may be filed under 37 CFR 1.60 or 1.62), the examiner should make (or repeat) an appropriate requirement for restriction and require an election by the applicant UNLESS

(1) the applicant acknowledges the previous requirement in the parent application and clearly indicates which invention is to be prosecuted if the requirement is repeated. The examiner should make any proper requirement for restriction in the first Office action, state how applicant has indicated an election (e.g. statement in a preliminary amendment or transmittal letter), and include an action on the merits on the claims of the elected invention;

or

(2) the application is a continuation, but not a division or CIP filed as a File Wrapper Continuation (FWC) under 37 CFR 1.62. The examiner should assume that the requirement and election made in the parent application carries over unless otherwise indicated by applicant. The exmainer's first action should include a repetition of the restriction requirement made in the parent application to the extent it is still applicable in the continuation and an indication that prosecution is being continued on the invention elected and prosecuted by applicant in the parent application.

The policy and practice of making requirements final and seeking review by way of petition (37 CFR 1.144) remains unchanged in a continuing application, whether a requirement for election was first made in the parent and renewed in the continuation application or was made for the first time in the continuation application.

(3) Product, Process of Making, Process of Using (MPEP 806.05(i))

Practice in this situation is being amended to conform to Rule 13.2(i) of the Patent Cooperation Treaty (PCT) so that a three way requirement can be required only where the process of making is not "specially adapted" to make the product (i.e. the requirements of MPEP 806.05(f) are met). Otherwise, the process of using must be joined with the claims directed to the product and the process of making the product even though a showing of distinctness between the product and process of using the product (MPEP 806.05(h)) could be made. A determination of the patentability of the product need not be made prior to making a requirement for restriction.

The Manual of Patent Examining Procedure will be revised to reflect these clarifications in the next revision.

GERALD MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 1, 1984.

Appendix A

Restriction Practice Survey—Feb. 1984

Serial No._____ Art Unit_____ Reviewer_____

Indicate type of Restriction or other requirement by checking box(s). Explain any deficiencies in Comments (Item 11).

	1.	Telephone	5 ☐ Yes	48 ☐ No	
97 ☐	2.	Generic Claim, Election of Species			
16 ☐	2a.	Markush-Type, Plurality of Patentably Distinct Inventions			
20 ☐	3.	No Generic Claim Present, Election of Species			
	4a.	Were the inventions properly grouped?	242 ☐ Yes	41 ☐ No	
	4b.	Were linking claims properly identified and grouped?	34 ☐ Yes	13 ☐ No	250 ☐ N/A
	5.	Reasons for Separate and Distinct Inventions			
		20 ☐ a. Intermediate- Final Product			
		36 ☐ b. Combination- Subcombination			
		21 ☐ c. Subcombination, Useable Together			
		38 ☐ d. Process and Apparatus			
		82 ☐ e. Product and Process of Making			
		7 ☐ f. Apparatus and Product Made			
		40 ☐ g. Product and Process of Using			
		6 ☐ h. Product, Process of Using and Process of Making			
		i. Conclusion to all Restriction Requirements proper?	217 ☐ Yes	29 ☐ No	
		j. Were Examiner's reasons reasonable?	161 ☐ Yes	88 ☐ No	
	6.	Requirement, When Mailed			
	A.	Was election required?	298 ☐ Yes	21 ☐ No	
	B.	30 day period set?	297 ☐ Yes	23 ☐ No	
		if other than 30 day period indicate_____			
	7A.	Was there a response to the requirement?	295 ☐ Yes	24 ☐ No	
	B.	Was an election made?	289 ☐ Yes	8 ☐ No	
	C.	Was requirement traversed?	139 ☐ Yes	154 ☐ No	
	D.	Was traversal based on allegation that:			
		12 ☐ 1. PTO policy is wrong			
		82 ☐ 2. Examiner reasoning is wrong			
		67 ☐ 3. No burden on examiner			
		16 ☐ 4. Other_____			
	8.	Further action by Examiner			
	A.	Did Examiner rebut applicant's traversal?	75 ☐ Yes	53 ☐ No	136 ☐ N/A
	B.	Did Examiner Make requirement final?	92 ☐ Yes	45 ☐ No	115 ☐ N/A
	C.	Modified?	18 ☐ Yes	170 ☐ No	
	D.	Withdrawn?	21 ☐ Yes	166 ☐ No	
☐	9.	Other			
	10.	Based on the record is the restriction requirement prima facie reasonable?	259 ☐ Yes	61 ☐ No	
☐	11.	Comments:			

_____

_____

_____

_____

_____

Appendix B

Restriction Practice Survey - Jan.—Feb. 1984 Guidelines

1. TELEPHONE
   Did representative have a record that a telephone restriction call was attempted?
2. GENERIC CLAIM, ELECTION OF SPECIES
   Were the generic claim(s) and species clearly set forth?

2a. MARKUSH - TYPE
   Did the requirement identify the patentably distinct species?

3. NO GENERIC CLAIM PRESENT, ELECTION OF SPECIES
   Were the species claims clearly identified?
4. RESTRICTION, GROUPINGS
   a. Were the inventions properly grouped?
   b. Were linking claims properly identified and grouped?
5. SEPARATENESS AND DISTINCTNESS
   a. INTERMEDIATE - FINAL PRODUCT
      Was a use for the intermediate product clearly set forth?
   b. COMBINATION - SUBCOMBINATION
      Was it shown that the combination as claimed does not require the particulars of the subcombination as claimed for patentability and that the subcombination has utility other than in the combination?
      Were situations involving *evidence claims* properly explained?
   c. SUBCOMBINATION, USEABLE TOGETHER
      Was it shown that the subcombinations were separately useable (utility other than with the other invention)?
   d. PROCESS AND APPARATUS
      Was one or more of t he following clearly indicated:
      1) the process can be practiced by another materially different apparatus as... .
      2) the process can be practiced by hand.
      3) the apparatus as claimed can be used to practice another and materially different process such as...?
   e. PRODUCT AND PROCESS OF MAKING
      Was one or more of the following reasons given:
      1) the process can be used to make a materially different product such as... .

2) the product can be made by a materially different process such as...?

f. APPARATUS AND PRODUCT MADE
Was one or more of the following reasons given:
1) the apparatus is an obvious apparatus for making the product and the apparatus can be used to make a different product such as... .
2) the product can be made by a materially different apparatus such as...?

g. PRODUCT AND PROCESS OF USING
Was one or more of the following reasons given:
1) the process can be practiced with another materially different product such as... .
2) the product can be used in a materially different process such as...?

h. PRODUCT, PROCESS OF USING AND PROCESS OF MAKING
Was non-allowability of product claim indicated?

i. CONCLUSION TO ALL RESTRICTION REQUIREMENTS
Was the following paragraph added as a conclusion to the restriction requirement:
"Because the inventions are distinct for the reasons given above and [ ] restriction for examination purposes as indicated is proper"
Was one or more of the following reasons inserted in the "bracket" above:
1) have acquired a separate status in the art as shown by their different classification.
2) have acquired a separate status in the art because of their recognized divergent subject matter.
3) The search required for Group [ ] is not required for Group [ ] ?

j. WERE EXAMINER'S REASONS REASONABLE?
Were the reasons advanced by the examiner reasonably complete and consistent with the type of restriction made and not mere unsupported statements of conclusion.

6. REQUIREMENT, WHEN MAILED
A. Was applicant advised that the response to the requirement *must* include an election of the invention?
B. Was applicant given 30 days to make an election?

7A. At the time of the survey, was a response to the written restriction requirement filed?
B. If so, was an election consonant with the requirement made?
C. If so, was the requirement traversed in the manner required to preserve the right to petition?
D. If the requirement was traversed, was the traversal based on an argument?

1. That the PTO policy embodied in the MPEP guidelines is wrong.
2. That the examiner's stated reasons for insisting upon restriction are wrong — e.g. the product as claimed cannot be made by a materially different process *or* separate Markush-type inventions are not patentably distinct.
3. That there is no unreasonable burden on the examiner to examine inventions which are shown to be distinct.
4. That does not fall in categories 1-3 — identify argument.

8. FURTHER ACTION BY EXAMINER
A. Did Examiner rebut applicant's traversal?
B. Did he make the requirement final?
C. Did the examiner modify the restriction requirement as the result of a traversal?
D. Did the examiner withdraw the restriction requirement as the result of a traversal?

9. OTHER
Was a restriction requirement made which did not specifically fit into the categories set forth above? Explain.

10. BASED ON THE RECORD IS THE RESTRICTION REQUIREMENT PRIMA FACIE REASONABLE?
Was the restriction requirement justified based on the record as a whole regardless of the manner in which the examiner handled the requirement?

11. COMMENTS
List any comments needed to further explain any deficiencies in the restriction requirement.

Department of Commerce
Patent and Trademark Office
37 CFR Part 2
[Docket No. 40671-4071]
Trademark Applications

Agency: Patent and Trademark Office, Commerce.

Action: Proposed rulemaking.

Summary: Patent and Trademark Office proposes amendments to the rules of practice in trademark cases to revise and clarify the requirements for drawings and to revise the filing date requirements for an application for registration of a mark. The amendments also revise the requirements for specimens submitted in connection with applications for service marks not used in printed or written form. The proposed amendments are needed to reduce the computer system storage space required for drawings; to insure that all applications which are filed can be searched under the automated search system; to insure that drawings can be faithfully reproduced by photocomposition techniques; and to codify the existing practice in accepting audio cassette tape recordings as specimens in connection with sound mark applications.

Dates: Written comments by Oct. 30, 1984.

Addresses: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231; Attn: Ellen J. Seeherman. Written comments will be available for public inspection in Rm. 11E10 of Bl Plz., 2021 Jefferson Davis Hwy., Arlington, Va.

For Further Information Contact: Ellen J. Seeherman by telephone at (703) 557-7464 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: The Patent and Trademark Office is considering amendments to the rules of practice in trademark cases to amend the requirements for receiving a filing date for an application for registration of a mark and to amend the requirements for submissions of drawings and for sound mark specimens.

The specific rules for which amendments are proposed are §§2.21, 2.52 and 2.58. In addition, it is proposed to remove §2.54.

Section 2.21 is proposed to be amended by revising paragraph (a)(3). The amendment will require that a drawing meet all of the requirements of §2.52 if the application is to be accorded a filing date. If a drawing does not meet the requirements of satisfactory reproduction characteristics and size, the application will be denied a filing date and, under the provisions of §2.21(c), will be returned to the person who submitted the application. At present, a drawing not meeting the requirements of §2.52 is accepted for examination, but must be corrected before publication or allowance. However, with automated searching informal drawings will not be reproducible on a computer terminal display screen, and will therefore be unavailable for searching until a corrected drawing is submitted many months later. This will seriously compromise the integrity of trademark searches and will adversely affect applicants and the public.

Section 2.52 is proposed to be amended by revising paragraphs (a), (b), (c) and (e) to emphasize the charac-

teristics essential to satisfactory reproduction of drawings.

Paragraph (a) of §2.52, as proposed, reiterates that all lines and letters must be black, and clarifies that this requirement applies to shading. This will insure that the drawing will be suitable for printing and for viewing on the display screen.

Paragraph (b) of §2.52, as proposed, clarifies the type of paper which must be used for the drawing .

Paragraph (c) of §2.52 is proposed to be amended to limit the size of the mark as depicted on the drawing sheet to 4 inches (10.3 cm) in height and 4 inches (10.3 cm) in width, with 2.5 inches (6.1 cm) in height and width the preferable size. At present, marks which exceed these sizes must be reduced for printing purposes and for display on a computer terminal. This may result in a loss of clarity. If details, such as color lining, which are part of the mark will be precluded by the size limitation, it is proposed that a verbal description be inserted in the application instead.

Paragraph (e) of §2.52, as proposed, amends the depiction of the color chart to indicate that larger spaces between lines are preferred for color linings. Reducing the density of the color lining will improve the clarity of the marks when they are reproduced.

Section 2.54 is proposed to be removed since proposed §2.21 will make this section unnecessary.

Section 2.58, paragraph (b), is proposed to be amended to allow tape cassette recordings rather than disc recordings to be submitted as specimens for service marks not used in printed or written form. This codifies the present practice. In view of this proposed amendment, paragraph (b) is also proposed to be amended by eliminating the provision that the Office will arrange to have disc recordings made from any type of recording the applicant submits.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) since any additional burden would be minimal and not disproportionate in effect.

This rule contains no new information collection requirement for the purpose of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. The existing application requirements referenced in this rule have been approved by OMB (Approval No. 0651-0009).

List of Subject in 37 CFR Part 2

Administrative practice and procedures, Courts, Lawyers, Trademarks.

Notice is hereby given that pursuant to the Commissioner's authority under Section 41 of the Trademark Act of July 5, 1946, as amended, 15 U.S.C. 1123, and section 6 of the Act of July 19, 1952, as amended, 35 U.S.C. 6, the Patent and Trademark Office proposes to amend Part 2 of Title 37 of the Code of Federal Regulations as set forth below.

In the text of the proposed amendments, additions are indicated by arrows and deletions are indicated by brackets.

It is proposed to amend 37 CFR, Part 2 as follows:

1. Section 2.21 is proposed to be amended by revising paragraph (a) to read as follows:

§2.21 Requirements for receiving a filing date.

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing of the mark sought to be registered [containing the information required by paragraph (d)] ►meeting all the requirements ◄ of §2.52;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the Trademark Act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the Act;

(7) The required filing fee for at least one class of goods or services. Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

* * * * *

2. Section 2.52 is proposed to be revised to read as follows:

§2.52 Requirements for drawings.

(a) *Character of drawing.* All drawings, except as otherwise provided, must be made with the pen or by a process which will ►provide high definition upon ◄ [give them satisfactory] reproduction [characteristics]. A photolithographic reproduction or printer's proof copy may be used if otherwise suitable. Every line and letter ►, including color lining and lines used for shading ◄ must be black. [This direction applies to all lines, however fine, and to shading.] All lines must be clean, sharp, and solid, and [they] must not be [too] fine or crowded. [Surface shading, when used, should be open.] ►Gray tones or tints may not be used for surface shading or any other purpose.◄ The requirements of this paragraph are not necessary in the case of drawing permitted and filed in accordance with paragraph (d) of §2.51.

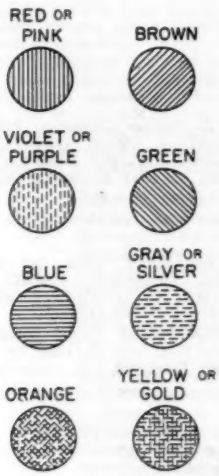
(b) *Paper and ink.* The drawing must be made upon ►paper which is flexible, strong, smooth, nonshiny, ◄ [pure] white and durable [paper, the surface of which is calendered and smooth]. A good grade of bond paper is suitable ►; however, water marks should not be prominent◄. India ink [alone] ►or its equivalent in quality ◄ must be used for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not acceptable.

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 to 8½ inches (20.3 to 21.6 cm.) wide and 11 inches (27.9 cm.) long. One of the shorter sides of the sheet should be regarded as its top. ►It is preferable that the drawing be 2.5 inches (6.1 cm.) high and/or wide, but in no case may it be larger than 4 inches (10.3 cm.) high and 4 inches (10.3 cm.) wide. If the amount of detail in the mark precludes a reduction to this size, such detail may be verbally described in the body of the application. ◄ [When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave] ►There must be ◄ a margin of at least 1 inch (2.5 cm.)on the sides and bottom of the paper and at least 1 inch (2.5 cm.) between ►the drawing ◄ [it] and the heading.

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one fourth of the sheet, there must be placed a heading, listing in separate lines, applicant's complete name, applicant's post office address, the dates of first use of the mark and first use of the mark in commerce (except for an application filed under section 44 of the Trademark Act), and the goods or services recited in the application or a typical item of the goods or services if a number of items are recited in the application. This heading should be typewritten.

(3) *Linings for color.* Where color is a feature of a mark, the color or colors employed may be designated

by means of conventional linings as shown in the following color chart:



3. Section 2.54 is proposed to be removed.

[§2.54 Informal Drawings.

A drawing not in conformity with §2.51 or paragraphs (a), (b), (c), or (e) of §2.52 or §2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before that mark can be published or the application allowed.]

4. Section 2.58 is proposed to be amended by revising paragraph (b) to read as follows:

§2.58 Specimens or facsimiles in the case of a service mark.

* * * * *

(b) In the case of service marks not used in printed or written form, three [single face, unbreakable, disc] ►audio cassette tape ◄ recordings will be accepted. [The speed at which the recordings are to be played must be specified thereon. If facilities are not available to the applicant to furnish recordings of the required type, the Patent and Trademark Office may arrange to have made, upon request, and at applicant's expense, the necessary disc recordings from any type of recording the applicant submits.]

DONALD J. QUIGG,

June 12, 1984.

Deputy Commissioner of Patents and Trademarks.

[FR Doc. 84-20251 Filed 7-31-84; 8:45 am]
BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of Sept. 4, 1984

B1 3,796,048	4,415,468	4,436,670	4,441,497
Re. 31,413	4,415,711	4,437,056	4,441,547
D. 271,328	4,417,087	4,437,081	4,441,865
4,268,224	4,418,971	4,437,124	4,441,924
4,276,620	4,420,060	4,437,273	4,441,939
4,280,915	4,422,370	4,438,243	4,442,080
4,322,974	4,423,998	4,438,454	4,442,160
4,324,284	4,424,818	4,438,729	4,442,731
4,332,242	4,425,812	4,438,945	4,442,984
4,348,141	4,427,067	4,439,096	4,443,035
4,350,937	4,427,734	4,439,224	4,443,201
4,362,547	4,428,437	4,439,254	4,443,232
4,369,309	4,428,820	4,439,436	4,443,351
4,377,653	4,428,828	4,440,018	4,444,006
4,378,531	4,430,463	4,440,204	4,444,122
4,380,648	4,431,571	4,440,257	4,444,139
4,382,179	4,431,643	4,440,300	4,444,192
4,385,850	4,432,006	4,440,599	4,444,582
4,390,436	4,432,310	4,440,621	4,444,869
4,395,556	4,432,400	4,440,637	4,446,561
4,398,329	4,433,159	4,440,780	4,447,798
4,401,581	4,433,321	4,440,920	4,447,932
4,404,123	4,433,356	4,441,072	4,448,023
4,404,769	4,433,402	4,441,211	4,448,099
4,408,691	4,435,139	4,441,313	4,448,791
4,408,808	4,435,241	4,441,464	4,454,201
4,409,633	4,435,292	4,441,490	
4,409,927	4,435,786	4,441,493	

Disclaimers

4,244,161.—*Jack L. Guiter,* Ottumwa, Iowa. HARVESTER HEADER WITH DRIVE MECHANISM FOR OSCILLATING KNIFE CUTTERS. Patent dated Jan. 13, 1981. Disclaimer filed June 11, 1984, by the assignee, *Deere & Co.*

Hereby enters this disclaimer to all claims of said patent.

4,261,867.—*Peter Fankhauser,* Onex; and *Anthony F. Morris,* Gingins, Switzerland. USING 1-ETHYNYL-2,2,6-TRIMETHYL-CYCLOHEXANOL TO ENHANCE WOODY FRAGRANCE OF PERFUME COMPOSITIONS. Patent dated Apr. 14, 1981. Disclaimer filed July 13, 1984, by the inventors, the assignee, *Firmenich, S.A., consenting.*

Hereby enters this disclaimer to claim 4 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Florida	Miami—Dade Public Library	(305) 579-5001
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis—Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6670
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF August 4, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	1-6-82
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-17-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	4-17-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—B. R. GRAY, Director	3-19-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	2-23-80
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-30-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-29-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	5-9-80
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	2-25-82
DESIGN, GROUP 290—K. L. CAGE, Director	2-22-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—(Vacant)	8-4-80
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	4-1-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	6-12-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	7-9-81
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	3-24-82

Expiration of patents: The patents within the range of numbers indicated below expire during August 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,333,280 to 3,339,205, inclusive

Plant Patents ..... Numbers 2,756 to 2,763 inclusive

REEXAMINATIONS

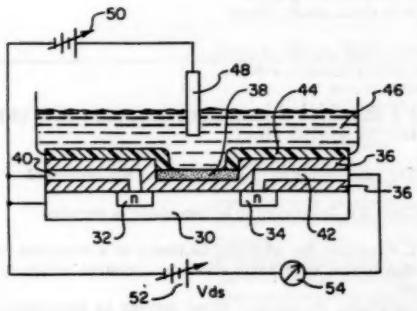
SEPTEMBER 4, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,020,830 (240th)
SELECTIVE CHEMICAL SENSITIVE FET TRANSDUCERS

Curtis C. Johnson, Sandy; Stanley D. Moss, Kaysville, and Jiri A. Janata, Salt Lake City, all of Utah, assignors to The University of Utah, Salt Lake City, Utah

Reexamination Request No. 90/000,395, Jun. 6, 1983.
Reexamination Certificate for Patent No. 4,020,830, issued May 3, 1977, Ser. No. 557,545, Mar. 12, 1975.
Filed Jun. 6, 1983, Ser. No. 557,545
Int. Cl.[3] A61B *5/05;* **C12Q** *1/00;* **G01N** *27/46*
U.S. Cl. 128—635



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2, 9–11** and **25–27** are cancelled.

Claims **1, 3–8** and **12–21** are determined to be patentable as amended.

Claims **22–24**, dependent on an amended claim, are determined to be patentable.

1. A chemical sensitive field-effect transistor transducer unit for detecting chemical properties of substances to which the unit is exposed and including a transducer which comprises:

a semi-conductor substrate having a doping polarity,

a pair of spaced apart diffusion regions located at the surface of said substrate material,

an electrical insulator material overlying at least a portion of said diffusion regions and the surface of the substrate material lying between the diffusion regions,

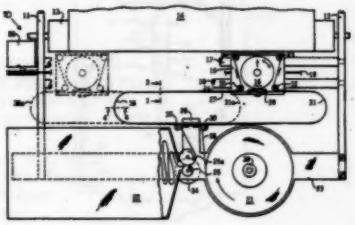
a chemical selective system [containing a] *which includes a first* chemical selective membrane overlying said insulator material *and containing an ion-exchanger which selectively reacts with certain ions when exposed to substances containing such ions to enable an exchange of ions between the ion-exchanger and the substances,* and

a reference electrode connected [to] *in* circuit relationship with said spaced apart diffusion regions through a potential source such that a potential is created and added to the potential generated in the chemical selective membrane, the combination of which affects the conductivity between said diffusion regions as a measure of the chemical properties of said substances.

B1 4,047,608 (241st)
COMPLIANT RIBBON-GUIDING STRUCTURE

Frederick P. Willcox, 565 Oenoke Ridge, New Canaan, Conn. 06840

Reexamination Request No. 90/000,377, May 9, 1983.
Reexamination Certificate for Patent No. 4,047,608, issued Sep. 13, 1977, Ser. No. 672,710, Apr. 1, 1976.
Int. Cl.[3] B41J *32/00, 33/24, 33/06, 35/04;* **B41L** *27/18*
U.S. Cl. 400—208



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–33** is confirmed.

1. In a printing machine of the kind having a frame, and a printing carriage movable with respect to said frame along a printing path, said printing carriage comprising printing means,

the improvement comprising:

ribbon supply means carried by said frame and relatively stationary as compared to said movable printing carriage for storing a supply of pliant ribbon, said ribbon supply means having an output,

ribbon directing means on the movable printing carriage for directing said ribbon past the printing means, said ribbon directing means having an input on said movable printing carriage, and

flexible ribbon-guide-means for guiding the pliant ribbon from the ribbon supply means to the ribbon directing means,

said flexible ribbon-guide-means including means uniformly flexible throughout its entire length for guiding the ribbon from said output to said input along a path of unvarying length irrespective of the position of said movable printing carriage along its printing path.

B1 4,197,942 (242nd)
CONTAINERIZED FLUID SUPPLY FOR FLUID MIXING AND DISPENSING SYSTEM

Leonard W. Gacki, White Plains, and Robert E. Daly, Farmingdale, both of N.Y., assignors to Picker Corporation, Cleveland, Ohio

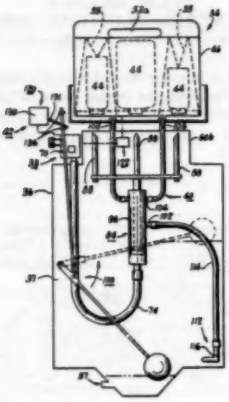
Reexamination Request No. 90/000,371, May 5, 1983.
Reexamination Certificate for Patent No. 4,197,942, issued Apr. 15, 1980, Ser. No. 849,524, Nov. 7, 1977.
Division of Ser. No. 609,957, Sep. 3, 1975, Pat. No. 4,103,358.
Int. Cl.[3] B65D *25/08*
U.S. Cl. 206—219

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5, 6, 11, 17, 18** and **20–22** is confirmed.

Claims 1-4, 7, 8, 10, 12-14, 16 and 23-25 are cancelled.

Claims 9, 15 and 19 are determined to be patentable as amended.



5. A containerized fluid supply for supplying a plurality of vessels of fluid concentrate to a fluid mixer, comprising:

(a) a container within which the vessels are disposed, the container having sidewalls and a base member attached to the sidewalls for supporting the vessels;

(b) the base member having one aperture corresponding to each vessel to permit access to each vessel from outside the container; and

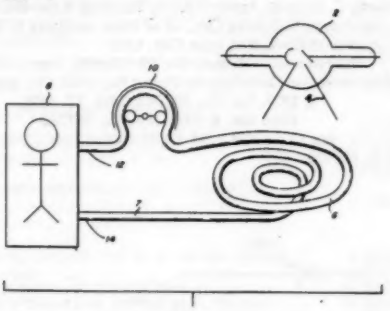
(c) a lid attachable to the sidewalls for securing the vessels within the sidewalls and firmly against the base member, the lid having a contoured inner surface to permit only vessels of a predetermined size to be accommodated within the container.

B1 4,321,918 (243rd)

PROCESS FOR SUPPRESSING IMMUNITY TO TRANSPLANTS

William T. Clark, II, 6 Davis Blvd., New Orleans, La. 70121

Reexamination Request No. 90/000,421, Jul. 15, 1983.
Reexamination Certificate for Patent No. 4,321,918, issued Mar. 30, 1982, Ser. No. 87,576, Oct. 23, 1979.
Int. Cl.[3] A61M *1/03*
U.S. Cl. 604—4



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-3, 5 and 6 is confirmed.

Claim 4 is determined to be patentable as amended.

1. A process for inhibiting immunity to a transplant in a human patient undergoing rejection symptoms which comprises:

exchanging the patient's blood through an extracorporeal link,

and irradiating the patient's blood while in transit through the link with a transient dose to significantly reduce lymphocyte function but less than that required to significantly diminish the patient's lymphocyte population until the rejection symptoms subside.

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 4, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T104,601

ALKANEDIYL BRIDGED BENZIMIDAZOLO MONOMETHINE CYANINE DYES, PROCESSES FOR THEIR PREPARATION, AND PHOTOGRAPHIC EMULSIONS AND ELEMENTS CONTAINING SUCH DYES

David P. Gilbert, Kodak Park, Rochester, N.Y. 14612

Division of Ser. No. 471,615, Mar. 3, 1983,. This application Jan, 12, 1984, Ser. No. 570,147

Int. Cl.³ C07D *235/04*

U.S. Cl. 548—328

No Drawing. 33 Pages Specification

Alkanediyl bridged benzimidazolo monomethine cyanine dyes are disclosed wherein at least one benzimidazolo nucleus is provided with an electron-withdrawing group. A disclosed preparation of the dyes includes producing an electron-withdrawing group substituted bis(2-nitrophenyl)-2-R^1-propanediamide, where R^1 is hydrogen or alkyl; converting the nitro groups to primary amine substituents; removing the elements of water to effect ring closure; and thereafter providing the —CR^1— linked benzimidazole nuclei so formed with an N,N^1-alkanediyl bridging group and quaternizing substituents. Dye synthesis is completed by reducing the —CR^1— linking group to the corresponding methine. The dyes are useful as sensitizers in silver halide emulsions and photographic elements.

REISSUES

SEPTEMBER 4, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,656

ENGINE IGNITION AND POWER ANALYZER

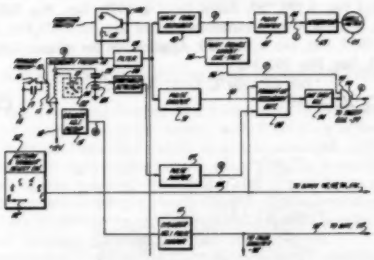
Peter A. Howes, La Verne, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Reissued No. Re. 29,984, dated May 8, 1979, Ser. No. 765,614, Feb. 4, 1977.

Original No. 3,650,149, dated Mar. 21, 1972, Ser. No. 792,382, Jan. 21, 1969. Application for reissue Nov. 6, 1980, Ser. No. 204,472

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—117.3 **48 Claims**



23. In an apparatus for analyzing the operation of the multiple cylinder combustion engine provided with an ignition coil having a primary and secondary winding for supplying electrical ignition pulses to the cylinders, the combination with comprises:

probe pickup means coupled to the ignition coil for generating electrical signals representative of the ignition characteristics of individual cylinders,

pulse shaping means coupled to the probe pickup means for generating a first control pulse in response to the ignition pulse for each of the cylinders,

means responsive to each occurrence of the first control pulse for providing a second control pulse which is delayed from the occurrence of the first control pulse by an amount directly proportional to the interval between the successive times of the cylinder ignition,

a cathode ray oscilloscope having vertical and horizontal inputs,

means coupled to the horizontal input of the oscilloscope and responsive to the occurrence of the second control pulse for applying a sawtooth sweep signal of constant peak amplitude in advance of each cylinder ignition to said horizontal input, **[[and]]**

means for coupling the probe pickup means to the vertical input of the oscilloscope,

means responsive to the occurrence of the second control pulse for generating an anticipatory ignition suppression signal in advance of the ignition time in each cylinder, and

means coupled to the ignition coil and responsive to the ignition suppression signal for suppressing the ignition in a selected cylinder.

Re. 31,657

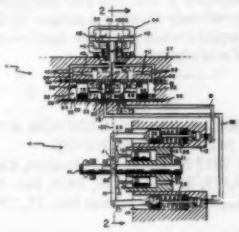
FEEDBACK MECHANISM FOR VARIABLE DISPLACEMENT HYDRAULIC DEVICE HAVING AN ELECTROHYDRAULIC CONTROLLER

John T. Caruso, Kenmore, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Original No. 4,248,137, dated Feb. 3, 1981, Ser. No. 59,650, Jul. 23, 1979. Continuation of Ser. No. 869,829, Jan. 16, 1978, abandoned. Application for reissue Apr. 27, 1981, Ser. No. 257,791

Int. Cl.³ F15B *9/10*; F01B *13/02*

U.S. Cl. 91—375 R **14 Claims**



7. In hydraulic apparatus *having a casing,* having a pivotal load *arranged within said casing,* having a fluid-operated mechanism *arranged within said casing* for adjusting the pivotal position of said load, and also having a controller *arranged without said casing, said controller* including an output stage having a movable spool member and a movable sleeve member arranged such that the relative positions of said members controls the flow of hydraulic fluid with respect to said mechanism, the improvement which comprises:

mechanical feedback means interposed between said load and one of said members and operative to produce **[**followup**]** *follow-up* movement of said one member in response to pivotal movement of said load, said mechanical feedback means **[**including**]** *providing* a single joint between said load and said one member *and including a shaft having one end connected to said load for rotative movement therewith, having an intermediate portion sealingly penetrating said casing, and having its other end arranged without said casing, and including an arm having one end connected to said one member and having its other end at a location eccentric from the axis of said shaft.*

Re. 31,658

FUEL INJECTION SYSTEM

Todd L. Rachel, Rochester, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Original No. 3,763,833, dated Oct. 9, 1973, Ser. No. 144,268, May 17, 1971. Continuation of Ser. No. 457,148, Apr. 1, 1974, abandoned, and a continuation-in-part of Ser. No. 815,800, Apr. 14, 1969, abandoned. Application for reissue Jan. 14, 1980, Ser. No. 111,640

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—488 **30 Claims**

28. A multivibrator circuit including in combination:

comparator means having a reference input, first and second signal inputs, and an output;

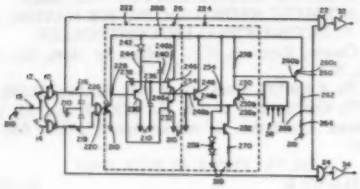
means for supplying a reference voltage to the reference input of the comparator means;

timing capacitor means coupled across the first and second

signal inputs of the comparator means at first and second junctions, respectively;

means for supplying operating potential;

first and second charging circuits coupled between the means for supplying operating potential and the first and second junctions, respectively, and;



switch means connected to said first and said second charging circuits for alternatively shunting a portion of the current in one of said charging circuits to provide supplementing current in the other of said charging circuits.

Re. 31,659

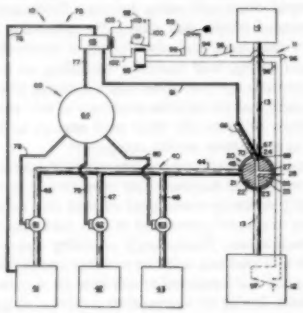
SANITARY BACKWASHING SYSTEM FOR AUTOMATIC MILKING MACHINES

Michael J. Brown, 7817 N. Douty St., Hanford, Calif. 93230

Original No. 4,168,677, dated Sep. 25, 1979, Ser. No. 898,432, Apr. 20, 1978. Application for reissue Sep. 23, 1981, Ser. No. 304,892

Int. Cl.[3] **A01J** *5/04;* **B08B** *3/00, 9/00*

U.S. Cl. 119—14.18 **11 Claims**



1. A sanitary backwashing system for an automatic milking machine having a milking unit, a source of vacuum and a milk line interconnecting the milking unit and the soruce of vacuum, comprising:

A. a source of sanitisizing fluid;

B. a fluid control valve connected to the source of sanitizing fluid;

C. a source of air under pressure;

D. an air control valve connected to the source of air under pressure;

E. a sanitation line interconnecting the fluid control valve and the air control valve in parallel;

F. a three-way valve in the milk line connected to the sanitation line having a first position shutting off the sanitation line while connecting the milking unit to the source of vacuum, and a second position connecting the sanitation line to the milking unit while isolating the milking unit from the source of vacuum; and

G. means for successively placing the three-way valve in the first position, while closing the fluid control valve and the air control valve, positioning the three-way valve in its second position while opening the fluid control valve to flush sanitizing fluid through the milking unit with the air control valve closed, with the three-way valve in its second position closing the fluid control valve and opening the air control valve to blow sanitizing fluid from the milking unit.

Re. 31,660

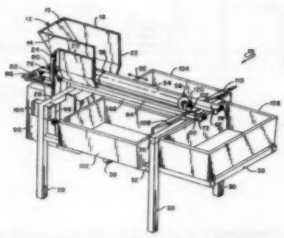
SORTING SYSTEM AND APPARATUS

Robert G. Holmes, Columbus, Ohio, assignor to Ohio Agricultural Research and Development Center, Wooster, Ohio

Original No. 4,176,750, dated Dec. 4, 1979, Ser. No. 940,075, Sep. 6, 1978. Continuation-in-part of Ser. No. 778,794, Mar. 17, 1977, Pat. No. 4,116,339. Application for reissue Aug. 17, 1981, Ser. No. 293,342

Int. Cl.[3] **B07C** *1/00;* **A01D** *33/02*

U.S. Cl. 209—699 **41 Claims**



1. Sorting apparatus for objects exhibiting identifiable dynamic response to vibrational phenomena comprising:

means for introducing a quantity of said objects at the entrance location of a sorting zone extending along a given longitudinal axis to an exit location;

means defining an oscillatory surface within said zone and extending along said longitudinal axis;

drive means including a dynamically balanced rotative drive member actuable to impart oscillation of predetermined frequency and amplitude characteristics to said oscillatory surface;

transporter means including a plurality of regularly-spaced parallel carrier components pivotally interconnected in endless chain-like fashion to define a conveyor within said zone extending from said entrance location in parallel relationship with said longitudinal axis, each said carrier component having an upwardly disposed support surface when within said zone extending outwardly from a location adjacent said oscillatory surface at a predetermined angle of inclination with respect to horizontal, said spacing being selected to provide a two position support for said objects upon adjacent said support surfaces while moving them within said zone in orientations promoting the kinetic reaction thereof with said oscillatory surface;

means adjacent said zone for receiving reacted said objects exhibiting predetermined dynamic response characteristics to said kinetic reaction; and

means for simultaneously actuating said drive means and said transporter means.

Re. 31,661

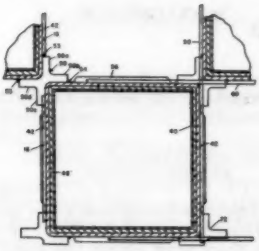
SPENT NUCLEAR FUEL STORAGE RACKS

Leslie Mollon, Southfield, Mich., assignor to AAR Corp., Elk Grove Village, Ill.

Original No. 4,143,276, dated Mar. 6, 1979, Ser. No. 794,955, May 9, 1977. Application for reissue Oct. 31, 1980, Ser. No. 202,492

Int. Cl.³ G21F *5/00*

U.S. Cl. 250—507.1 **3 Claims**



1. A storage rack for receiving spent nuclear fuel cells comprising

an egg crate grid formed of a multiplicity of elongated flat strips rigidly interconnected with their long dimensions horizontal and their width dimension vertical, said strips being at right angles to each other defining a multiplicity of square openings spaced apart by the thickness of said strips and forming a checker board pattern consisting of a first parallel series of openings and a second parallel series of openings perpendicular to said first series,

a multiplicity of vertical tubular open-ended modules each of which comprises inner and outer [aluminum] *metal* tubes and *panels containing* neutron absorbing material fitted between said inner and outer tubes, said modules having flat side walls and dimensioned to fit tightly into openings in said grid,

said modules being provided only in alternate openings in each row of grid openings with the modules in one row staggered with respect to the modules in the adjacent rows so that the modules leave open spaces in said grid between modules at opposite sides thereof,

and splines rigidly interconnecting diagonally adjacent modules, said splines having oppositely extending flat offset arms engaging the oppositely facing flat sides of diagonally adjacent modules while providing for lateral spacing between adjacent rows of modules as determined by the thickness of the strips of said egg crate grid, of less than the thickness of said spline arms, said spline arms being metallurgically bonded to the outer walls of said modules.

Re. 31,662

OUTPUT BUFFER WITH VOLTAGE SUSTAINER CIRCUIT

Roger I. Kung, Beaverton, Oreg., and Jerry D. Moench, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Original No. 4,250,412, dated Feb. 10, 1981, Ser. No. 17,748, Mar. 5, 1979. Application for reissue May 10, 1982, Ser. No. 376,794

Int. Cl.³ H03K *3/26, 5/22*

U.S. Cl. 307—530 **4 Claims**

7. A buffer circuit for providing complementary output data signals on first and second output nodes in response to a clock signal and sustaining the data signals in response to an enabling signal, comprising:

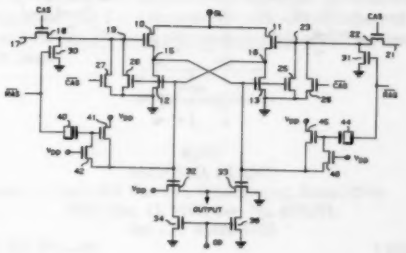
a first transistor having a control electrode for receiving a first input data signal, a first current electrode for receiving the clock signal, and a second current electrode coupled to the first output node;

a second transistor having a control electrode for receiving a second data signal which is complementary to said first data signal, a first current electrode for receiving the clock signal, and a second current electrode coupled to the second output node;

a third transistor having a control electrode coupled to the second output node, a first current electrode coupled to the first output node, and a second current electrode coupled to a first power supply terminal;

a fourth transistor having a control electrode coupled to the first output node, a first current electrode coupled to the second output node, and a second current electrode coupled to the first power supply terminal;

a fifth transistor having a first current electrode coupled to a second power supply terminal, a second current electrode coupled to said first output node, and a control electrode;



a sixth transistor having a first current electrode coupled to the control electrode of the fifth transistor, a second current electrode coupled to said first output node, and a control electrode coupled to the second power supply terminal;

a first coupling capacitor coupled between the control electrode of the fifth transistor and the enabling signal;

a seventh transistor having a first current electrode coupled to the second power supply terminal, a second current electrode coupled to said second output node, and a control electrode;

an eighth transistor having a first current electrode coupled to the control electrode of the seventh transistor, a second current electrode coupled to the second output node, and a control electrode coupled to the second power supply terminal; and

a second coupling capacitor coupled between the control electrode of the seventh transistor and the enabling signal.

Re. 31,663

DYNAMIC OUTPUT BUFFER

Roger I. Kung, Beaverton, Oreg., and Jerry D. Moench, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

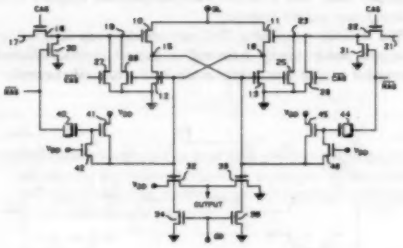
Original No. 4,250,412, dated Feb. 10, 1981, Ser. No. 17,748, Mar. 5, 1979. Application for reissue May 10, 1982, Ser. No. 376,795

Int. Cl.³ H03K *3/26, 5/22*

U.S. Cl. 307—530 **3 Claims**

6. A dynamic output buffer for buffering data and having a first and a second input and providing a buffer output, comprising: a cross coupled sense amplifier coupled to the first and second inputs and providing a first and a second output; an output driver coupled to the first and second outputs and providing the buffer output; first means coupled to the first input and controlled by the first output for shunting the first input; second means coupled to the second input and controlled by the second output for shunting the second input; third means coupled to the first input and controlled by an enabling signal to shunt the first input upon command from the enabling signal; fourth means coupled to the second input and controlled by the enabling signal to shunt the second input upon command from the enabling signal, a first restorer circuit

coupled to the first output to restore the first output when the third means is enabled; and a second restorer circuit coupled to



the second output to restore the second output when the fourth means is activated.

Re. 31,664

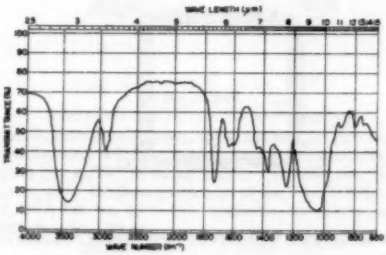
POLYSACCHARIDE OBTAINED FROM *PSEUDOMONAS STUTZERI*

Kenichi Hisatsuka; Saburo Ishiyama; Akira Inoue; Osamu Tsumura, all of Sodegaura, and Mikio Sato, Ichihara, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Original No. 4,146,706, dated Mar. 27, 1979, Ser. No. 759,627, Jan. 17, 1977. Application for reissue Sep. 4, 1980, Ser. No. 184,018

Int. Cl.³ C08B *37/00*

U.S. Cl. 536—123 **1 Claim**



1. Polysaccharide having a gel forming property which is characterized by the following properties: (1) comprising (a) glucose, (b) mannose, (c) dihydrostreptose and (d) 3-O-(1'-carboxyethyl)-L-rhamnose, the molar ratio of said constituents being (a):(b):(c):(d)=10:10:1-3:3-8; and (2) containing an O-acetyl group in an amount of from 8 to 14 weight percent calculated as acetic acid.

PLANT PATENTS

GRANTED SEPTEMBER 4, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,277

CARNATION NAMED "KLEREPOLA"

Siegfried Klemm, Hanfacker 9, 7000 Stuttgart 50, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,962
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—73 1 Claim

1. A new and distinct carnation cultivar, substantially as herein shown and described, characterized by its high productivity of bright red flowers borne singly on rigid, upright pedicels carried in spray arrangement on long, strong peduncles.

5,278

CHRYSANTHEMUM PLANT NAMED ORGANDY

Leonard H. Shoesmith, Woking, England, assignor to Pan American Plant Company, Parrish, Fla.

Filed Aug. 4, 1982, Ser. No. 405,260
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—80 1 Claim

1. A new and distinct cultivar of chrysanthemum plant known by the cultivar name Organdy, as shown and described, and particularly characterized by its flat capitulum form and decorative capitulum form and decorative capitulum type, light lavender ray floret color, diameter across face of capitulum 40–60 mm., semi-upright branching habit, with relatively long peduncles, 1.5 to 2 meter height with no long days, and by its uniform nine (9) week photoperiodic flowering response to short days.

5,279

BEGONIA PLANT

Shirley J. Lund, 906 Van Dr., Williamsburg, Iowa 52361

Filed Jan. 11, 1983, Ser. No. 457,271
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of begonia plant known by the cultivar name Agnes Kennison and particularly characterized as to hardiness and uniqueness of leaf coloration and color pattern, with the leaves being variegated patterned with random areas of pink, cream and one or more shades of green.

PATENTS

GRANTED SEP. 4, 1984

ERRATA

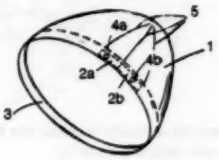
For CLASS	See PATENT NO.
446–462	4,468,884
229–043	4,469,258
252–106	4,469,848
549–013	4,469,864
548–341	4,469,865
315–205	4,469,981

PATENTS

GRANTED SEPTEMBER 4, 1984

GENERAL AND MECHANICAL

4,468,815
BATHING CAP
Alberto Pellegri, Viale Dante 53, 21016 Luino (VA), Italy
Filed May 17, 1983, Ser. No. 495,155
Int. Cl.³ A42B 1/12
U.S. Cl. 2—68 5 Claims

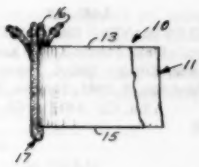


1. Bathing cap of elastic or semi-elastic material characterized in that it is provided with at least a deployment-clip which varies the circumference of the rim by a preset segment and wherein the deployment clip is composed of two bars of a substantially rigid material, mounted end to end on the rim of the cap and hinged about their adjacent ends to permit rotation of one bar to overlap the other thus causing the cap to fold about the axis of rotation of the clip and further composed of locking means to hold the clip closed in its folded position.

4,468,816
NURSING GARMENT
Selma Kaufer, 14005 Palawan Way, Apt. 311, Marina del Rey, Calif. 90291
Filed Mar. 8, 1983, Ser. No. 473,336
Int. Cl.³ A41D 1/20
U.S. Cl. 2—104 5 Claims

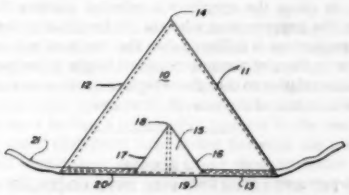
1. A reversible, nursing mother's garment comprising a single shoulder loop that fits only over a mother's arm and shoulder on one side of her body, and, attached to said shoulder loop, means for draping the wearer's breast nearer to said single shoulder loop, said draping means including a front panel and a rear panel, said front panel extending laterally from the wearer's side across the wearer's chest a distance at least sufficient to cover the wearer's breast nearer to said single shoulder loop, and extending downwardly, outwardly and obliquely across the wearer's chest from said single shoulder loop a distance sufficient to cover at least the head, neck and shoulders of an infant nursing at said nearer breast.

4,468,817
PERSPIRATION BAND FOR HEADGEAR
Merle W. Nunnery, and Judith Noel, both of 602 Franklin St., Gretna, La. 70053
Filed Oct. 17, 1983, Ser. No. 542,457
Int. Cl.³ A42B 00/00; A42C 5/00
U.S. Cl. 2—181 1 Claim



1. A perspiration band for headgear, comprising, in combination, a rectangular-shaped strip of washable terrycloth material, a plurality of spaced-apart male snap fastener elements fixedly secured near a top longitudinal side edge of said strip and a like plurality of female snap fastener elements near a bottom longitudinal edge of said strip, and said top longitudinal side edge including a plurality of cut-out notches dividing said edge into a plurality of tabs each of which contains a pair of said male snap fastener elements so as to adapt fastening said perspiration band to a conventional six strap headband of a safety hat.

4,468,818
HEAD SCARF
Bobbie A. Flannery, 21 Plackmeier, St. Charles County, Mo. 63366
Filed May 16, 1983, Ser. No. 494,946
Int. Cl.³ A42B 5/00
U.S. Cl. 2—207 9 Claims



1. A head scarf designed to represent a predetermined object, said scarf comprising:

(a) a body portion of a fabric ply in the shape of a triangulated area defined by three margins, one of which is a principal margin and the other two margins angularly converge to meet at a principal apex which is substantially centered to a mid-point of the principal margin;

(b) a nose portion of a fabric ply rectangular in shape in initial flat plan, said rectangularly shaped fabric ply having portions folded inwardly upon itself to form a triangulated area defined by two folded margins angularly converging to meet at an apex and a third elongated margin; said inwardly folded portions having adjacent edges substantially aligned with said principal apex and other margins lying in substantial registry with said elongated margin;

(c) tie means extending along said principal margin of said

body portion and having opposite free ends extending beyond said principal margin, whereby said free ends may be tied at the back of the head; and

(d) means fixing said tie means, said nose portion elongated margin and said other margins lying in registry with said elongated margin to said principal margin of said body portion with said nose portion overlying said body portion, said nose portion being free to be rotated about said principal margin to an extended position relative to said body portions.

4,468,819

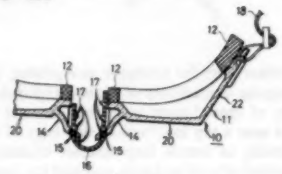
EYE GOGGLES HAVING IMPROVED NOSE STRAP

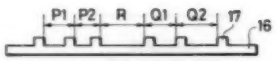
Kaisaku Ohno, c/o Ohno Plastic Kogyo Kabushiki Kaisha, 3-16, Ukima 1-Chome, Kita-ku, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,599

Int. Cl.³ A61F *9/02*

U.S. Cl. 2—430 **5 Claims**





5. In eyegoggles comprising a pair of separate eyepieces; a nose strap connecting said eyepieces together; connecting means secured to each eyepiece respectively engaging one of a pair of plural stops formed longitudinally spaced along the strap to space the eyepieces a selected distance from each other, the improvement wherein the length of at least one of said projections is different than the length of said other projection to thereby permit precisional height adjustment of one eyepiece relative to the other eyepiece to occur to accomodate facial contours of the individual wearer.

4,468,820

HAPTIC ATTACHMENT FOR INTRAOCULAR LENSES

Kenneth C. Uhler, Apple Valley, and Warren S. West, Burnsville, both of Minn., assignors to Precision-Cosmet Co., Inc., Minnetonka, Minn.

Filed May 10, 1982, Ser. No. 376,707

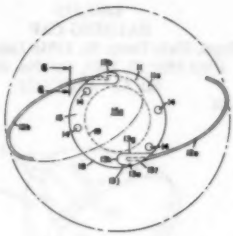
Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **11 Claims**

1. An intraocular lens adapted for use as an artificial lens implant, said intraocular lens comprising:

(a) an optical lens body having a circumference, a convex upper surface and a bottom surface, said lens body having an optical axis, said convex upper surface having a peripheral zone, an apex, and an optical zone thereinbetween, said lens body having a height of a distance from said apex to said bottom surface measured along said optical axis of said lens body; and

(b) a haptic element mounting means, said mounting means comprising a first boss cooperatively connected to said convex surface within said peripheral zone, wherein said first boss has a height that does not extend above a plane perpendicular to said optical axis, said plane containing said apex of said optical lens body, and whereby said first



boss does not substantially increase the height or circumference of said optical lens body.

4,468,821

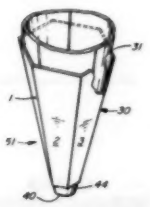
PNEUMATIC LEG STIFFENER

Gerald Saunders, Sydenham, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Mar. 9, 1983, Ser. No. 473,251

Int. Cl.³ A61F *1/02, 1/08, 1/12*

U.S. Cl. 3—18 **5 Claims**



1. In an artificial limb comprising a plurality of side-by-side air inflatable, intercommunicating compartments fabricated from a flexible air impervious material and extending along the entire length of said limb and having air passage inlet means into one of said compartments for use in inflation of said compartments, arranged to provide a tubular member having inner and outer walls, open at one end thereof to receive the stump of a patient's limb therein and tapered towards the other end thereof and wherein the inner walls of the compartments are in inter-engagement with each other from the stump of the limb to the other end when the compartments are inflated, the improvement comprising a plurality of substantially rigid, longitudinally extending stiffening members hingedly interconnected along adjacent marginal side edges thereof to form an outer tubular member supporting the outer walls of said tubular member and cooperating therewith when said compartments are inflated so as to provide a relatively stiff pylon member which resists buckling when supporting the patient's weight.

4,468,822

SPA

Stewart K. McKay, P.O. Box 5022, Gold Coast Mail Centre, Queensland 4217, Australia

Filed Feb. 23, 1983, Ser. No. 468,906

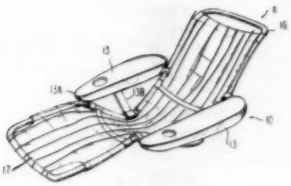
Claims priority, application Australia, Feb. 23, 1982, PF2811

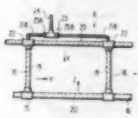
Int. Cl.³ E04H *3/18*

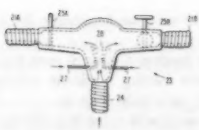
U.S. Cl. 4—488 **4 Claims**

1. A moveable spa which may be used in an in-ground or above-ground water containing structure such as a swimming

pool comprising a spa frame having flotation means capable of supporting at least one person and having at least two frame members each provided with a plurality of apertures, a pair of conveying conduits connectable to a water source for conveying water to the apertures in each frame member respectively of said spa frame, a valve housing associated with said conveying conduits and through which said liquid passes from said







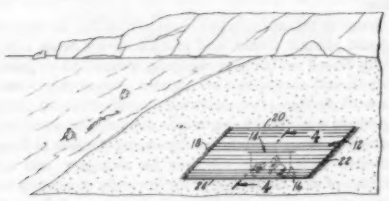
liquid source including a pair of valve members for controlling the flow of water to each conduit and plug means located in said spa frame for blocking passage of water to separate said two frame members wherein said apertures in each frame member are so oriented and arranged that upon selective actuation of said valve members said spa frame may be propelled in a forward or reverse direction or adopt a stationary position.

4,468,823

GROUND COVERING ASSEMBLY

"Alfie" Alfred Tounjian, 19825 N. Miami Ave., Miami, Fla. 33160

Filed Sep. 27, 1982, Ser. No. 423,994
Int. Cl.[3] A47G 9/06
U.S. Cl. 5—417 7 Claims



1. A ground covering assembly of the type primarily designed for one to lie upon when spread over a ground surface area, said covering assembly comprising:

(a) a sheet element formed from a material sufficiently flexible to conform to the ground surface being covered and including side portions extending the length thereof,

(b) a pouch structure attached to said sheet element and disposed to depend from an undersurface thereof, said pouch structure including an entrance means disposed and configured to provide access to the interior thereof, said side portions secured about the peripheral edge portion of said entrance means,

(c) said entrance means disposed contiguous said exposed surface of said sheet element, whereby said pouch structure is substantially hidden from view,

(d) a closure means secured to said peripheral edge portions of said entrance means and disposed to extend substantially along the length thereof, said closure means structured to be brought into mating engagement with itself thereby defining a closed configuration of said pouch structure and encasing contents of said pouch structure therein,

(e) said pouch structure configured to define a closable container being disposed and structured for at least partial burial in the ground covered by said sheet element,

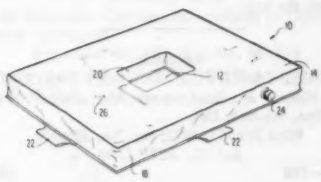
(f) whereby objects may be enclosed within said pouch structure and stored out of sight from the exposed surface of said sheet element.

4,468,824

WATER FILLED PRESSURE RELIEF DEVICE WITH RECTANGULAR APERTURE

J. Treacy O'Hanlan, 220 Rosser Ave., Waynesboro, Va. 22980

Filed Sep. 28, 1982, Ser. No. 425,781
Int. Cl.[3] A47C 27/08; A47G 9/00
U.S. Cl. 5—451 1 Claim



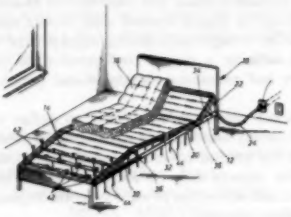
1. A pressure relief device comprising a parallelepiped hollow cushion of flexible plastic material having a parallelepiped central aperture therethrough, valve means extending through said device for filling said device for water, gripping means integrally formed with said device to facilitate shifting of the device relative to a patient, and means located in said device to prevent the growth of bacteria and to provide a tracer dye, said cushion being comprised of an upper rectangular sheet having a rectangular aperture in the center thereof, a lower rectangular sheet having a rectangular aperture in the center thereof, an outer peripheral strip sealed between the outer edges of said upper sheet and said lower sheet to define an outer side wall and an inner peripheral strip connected between the edges of said apertures in said upper and lower sheets to define an inner side wall wherein the edges of said strips and the edges of said upper sheet are folded inwardly in overlapping relation to define an outwardly smooth strong waterproof seal and the edges of said strips are sealed to the bottom sheet in flat overlying relation thereto whereby the cushion, when filled with water, will tend to maintain the edges of the upper sheet in spaced relation to the edges of the lower sheet upon the application of pressure to the upper sheet between the outer edges and the edges of the aperture to maintain the bony protuberances of a patient which are aligned with the aperture in spaced relation to whatever surface the cushion is placed upon, said gripping means being defined by a plurality of lateral extensions provided on said lower sheet in folded back relation and sealed between the lower edges of said outer peripheral strip and said lower sheet, providing at least one loop on each side of said cushion, thus providing gripping means for positioning said device relative to the bony protuberances of a patient.

4,468,825

OXYGEN REMOVAL SYSTEM FOR A BED

James R. Hobbs, 5012 Kinglet, Houston, Tex. 77035

Filed Jan. 28, 1983, Ser. No. 461,846
Int. Cl.³ A47C 21/04, 21/00; F24F 9/00
U.S. Cl. 5—508 6 Claims



1. An oxygen removal system for a bed having a frame and mattress comprising,

a manifold adapted to be connected to and supported from the frame and including an exhaust connection adapted to be connected to exhaust means,

a first plurality of suction tubes connected to the manifold with the ends positioned adjacent the mattress for removing oxygen from the mattress, and

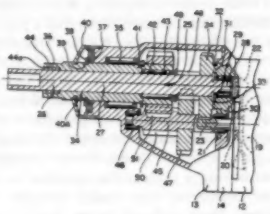
a second plurality of suction tubes connected to the manifold and extending downwardly for removing oxygen from beneath the bed.

4,468,826

HAMMER-DRILL FOR MASONRY FASTENERS

Robert G. Moores, Jr., Reisterstown, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 11, 1982, Ser. No. 387,699
Int. Cl.³ B25F 3/00
U.S. Cl. 7—158 24 Claims



1. A hand-held, portable drill, comprising:

(a) a housing;

(b) a motor mounted in the housing and having a drive shaft;

(c) an output shaft rotatably connected in the housing about a first axis and driven by the drive shaft at a first speed;

(d) a sleeve rotatably journaled in the housing concentric with the output shaft;

(e) the sleeve and output shaft having respective concentric forward portions extending beyond the housing;

(f) the output shaft forward portion including means for drivingly engaging a tool bit;

(g) a tubular fastener-driving member releasably and drivingly connected to sleeve forward portion and noncontactingly enclosing the tool bit;

(h) a spindle rotatably connected in the housing about a second axis parallel to the first axis; and

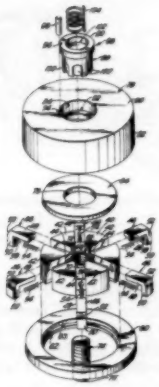
(i) coupling means for drivingly connecting the output shaft to the sleeve via the spindle to rotate the sleeve at a second, lower speed.

4,468,827

APPARATUS FOR MAKING INTERNALLY THREADED LOCK NUTS

Yitzik Shachaf, 3422 Avenue L, Brooklyn, N.Y. 11210

Filed Mar. 8, 1982, Ser. No. 355,868
Int. Cl.³ B21D 53/24, 53/22
U.S. Cl. 10—72 R 9 Claims



1. Apparatus for forming an internally threaded lock nut comprising:

a support member having a central seat for receiving an annular workpiece having a planar configuration, said central seat being arcuately shaped;

threaded pilot means axially extending upwardly from said central seat to provide a mandrel for the workpiece and for pressing internal threads into the workpiece;

finger means disposed above said central seat and being radially displaceable with respect to said central seat for forming peripheral indentations into the workpiece and for coacting with said pilot means to form the internal threads, outer ends of said finger means including outwardly facing cam surfaces;

plunger means disposed above said central seat and being axially displaceable with respect to said central seat, said plunger means including an arcuately shaped lower face complementary to said arcuately shaped seat for coacting therewith for arcuately shaping the planar configuration of the workpiece;

clamping means for inwardly displacing said finger means to form the indentations and the internal threads in the workpiece;

said clamping means including a cover member for supporting said plunger means, said plunger means being axially spring biased within said clamping means and extending towards said central seat so that said plunger means holds the workpiece in a first downward position of said clamping means while said finger means deforms the workpiece;

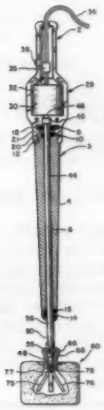
said cover member including a depending peripheral flange provided with a cam follower for engaging said cam surfaces of said finger means for inwardly displacing said finger means towards said central seat to deform the workpiece; and

drive means for driving said cover member downwardly in one continuous motion to said first downward position so that said finger means forms the indentations and internal threads in the workpiece while the workpiece is being held by the plunger means, and then to a lower second downward position so that said plunger means arcuately shapes the workpiece after the indentations and internal threads have been formed in the workpiece.

4,468,828
LEANING TOOL

Henry Nadolny, and Henryka A. Nadolna, both of 5045 N. Mango Ave., Chicago, Ill. 60630

Filed Sep. 30, 1982, Ser. No. 428,571
Int. Cl.[3] A47L *1/02, 11/02*
U.S. Cl. 15—97 R 4 Claims

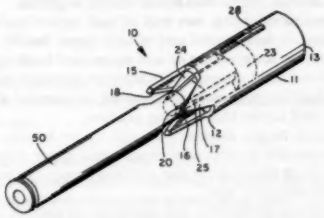


1. A cleaning device comprising
a stem portion and a housing portion comprising
a plurality of pieces assembled about one end of the stem portion,
a motor housed within said housing,
a drive shaft journaled within said stem portion and having one end coupled with the motor and having a second end extending from said stem portion,
a tool having a flexible socket portion providing a connection with said second end of the shaft,
and rigid means pendulously mounted on the shaft for swinging radially outwardly from the shaft pursuant to rotation thereof and engaging and distorting said socket portion for releasably interlocking the tool with the shaft and retractable upon said shaft stopping rotation to release from said socket portion and thereby permit ready removal of the tool from the shaft.

4,468,829
CLEANING AND DEBURRING TOOL FOR SPENT CARTRIDGE CASES

Betty L. Christensen, Box 493, Chandlers Valley, Pa. 16312

Filed Sep. 30, 1982, Ser. No. 430,816
Int. Cl.[3] A47L *25/00*; B23D *75/00*
U.S. Cl. 15—105 3 Claims



1. A tool for cleaning and deburring spent cartridge cases comprising:
a body member,
the body member having a first end and a second end,
a bore extending axially therebetween,
an outer deburring means formed in the first end of the body member for deburring the outer periphery of a spent cartridge case, internal threads at the second end of the body member,
an inner member telescopically supported in the bore of the body member adjacent the first end thereof,
an axially extending slot in said body member and a screw extending through said slot and threadably engaging said inner member,
said screw having a head,
said head engaging the outside of said body member for holding said inner member relative to said outer member,
the inner member having external deburring means for deburring the inner periphery of a spent cartridge case,
the deburring means on said inner member and the deburring means on said outer member being adapted to engage a bullet end of a spent cartridge case whereby said cartridge case will be deburred when the tool is rotated about said cartridge case with the inner and outer members in engagement therewith,
a holder,
said holder engaging the internal threads at the second end of said body,
a cleaner supported at a first end of said holder,
and a reamer tool supported at a second end of said holder.

4,468,830
SPONGE MOP

Douglas R. Batchelor, Chicago, Ill., assignor to Libman Broom Company, Arcola, Ill.

Filed Jun. 24, 1983, Ser. No. 507,591
Int. Cl.[3] A47L *13/146*
U.S. Cl. 15—119 A 9 Claims

1. A sponge mop comprising:
a handle having a foot plate rigidly and fixedly attached to one end of the handle;
a substantially planar rectangular supporting member, for a sponge, having a central panel with opposing side edges and a wing section pivotally joined to each said opposing side edge;
hinge means pivotally connecting a front edge of the central panel to a front edge of the foot plate;
means which pivotally urges each wing section into substantially planar alignment with the central panel but which permits the wing sections to pivotally move until they are about lateral to the central panel so as to position the wing sections opposite each other;
a mechanism for applying pressure to the wing sections to

pviot them opposite each other so as to extract water from a sponge when mounted on the sponge body supporting member by folding the sponge against itself, comprising a member having a foot section with a pair of rigid rod portions, spaced apart slightly more than the distance between the means pivotally joining the wing sections to the central panel, positioned between the foot plate and the sponge supporting member and extending outwardly beyond the central panel, a forward end rod portion lateral to and joining together the ends of the rigid rod portions and an arm means joined to and extending from the pair of spaced apart rigid rod portions along the handle, and means to move the arm means substantially axial to the handle to urge the rigid rod portions of the foot section against the top surface of the wing sections to cause them to pivot together opposite each other as the rigid rod portions slide along the top surfaces of the wing section; and

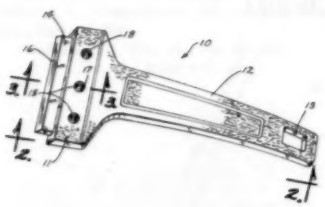
means which pivotally urges the central panel toward the foot plate.

4,468,831

ICE SCRAPER

Otto W. Schneider, Sioux City, Iowa, assignor to The Weller Company, Sioux City, Iowa

Filed Jun. 27, 1983, Ser. No. 508,264
Int. Cl.³ A47L *1/06*; B60S *1/04*
U.S. Cl. 15—236 R **3 Claims**



1. An ice scraper of a type used to scrape ice from vehicle windows comprising:

(a) a housing;

(b) a handle attached to said housing;

(c) a scraper element having a beveled ice scraping edge on one side thereof and a substantially identical ice scraping edge on the other side thereof;

(d) scraper element receiving and holding means disposed in said housing for receiving and frictionally holding said scraper element firmly attached to said handle, said scraper receiving and holding means comprising means for forming an opening in said housing of substantially the same shape and size as said one side and said other side of said scraper element whereby said one side of said scraper element will be frictionally press fit into said opening; and

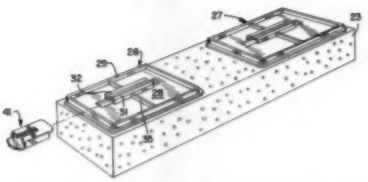
(e) access means for providing access to the other side of said scraper element when said other side is disposed in said scraper element receiving and holding means whereby when said one side of said scraper element becomes dull, said scraper element can be pried out of said scraper element receiving and holding means through said access means and said one side of said scraper element can then be forced into said scraper element receiving and holding means for allowing the other side of said scraper element to be used as an ice scraping edge after said one edge has become too dull to be useful as an ice scraping edge.

4,468,832

REFILL SPONGE MOP ASSEMBLY

Douglas R. Batchelor, Chicago, Ill., assignor to Libman Broom Company, Arcola, Ill.

Filed Jun. 24, 1983, Ser. No. 507,590
Int. Cl.³ A47L *13/10*
U.S. Cl. 15—244 R **8 Claims**



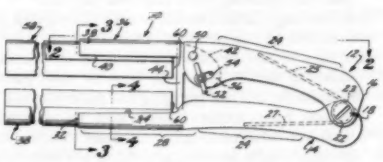
1. A refill sponge mop assembly comprising a sponge, a backing plate secured to one side of said sponge, said backing plate including first connecting means thereon, an adapter having at least two sides, said adapter including second connecting means on one of said two sides and third connecting means on the other of said two sides, said first and second connecting means having mating configurations and being interengageable, and said first and third connecting means having similar constructions.

4,468,833

TOOL HOLDERS FOR USE ON LOUVERS

Soren Samuelsson, 74-259 Candlewood St., Palm Desert, Calif. 92260

Filed Nov. 3, 1982, Ser. No. 438,763
Int. Cl.³ B60S *1/04*
U.S. Cl. 15—245 **5 Claims**



1. A tool for cleaning slat-like material comprising:

elongated upper and lower handle segments rotatably connected together at their one ends and projecting coextensively therefrom to form respective second ends;

bias means resiliently urging said second ends of said handle apart;

elongated upper and lower tool holding portions projecting coextensively in confronting relationship from said second ends, said lower tool holding portion being mounted from said second end of said lower handle segment;

pivot means coupling one end of said upper tool holding element to said second end of said upper handle segment to provide for pivoting of said upper tool holding portion relative to said upper handle segment to enable said upper tool holding portion to be adjusted for parallel alignment with said lower tool holding portion;

adjustment means mounted on said upper handle segment and operable to releasably secure said upper tool holding element in selected angular portions relative to said upper handle segment; and

a pair of tool assemblies, one mounted on each of said tool holding elements to be disposed in confronting relationship whereby a workman may release said adjustment means, grasp said handle segments, insert said tool holding elements on opposite sides of said slat-like material to position said tool assemblies astraddle of said material,

close said handle to the degree necessary to force said tool assemblies against said material with the desired pressure and then tighten said adjustment means to releasably fix said upper tool holding element to cause said upper tool assembly to remain fixed relative to said upper handle segment during repeated use in passing said tool assemblies along said slat-like material.

4,468,834

CLEANING APPARATUS FOR MACHINE SPINDLES

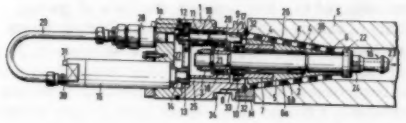
Klaus David, Heinrich-Lersch-Strasse 17, Düsseldorf, Fed. Rep. of Germany (D-4000)

Filed May 12, 1982, Ser. No. 377,427

Claims priority, application Fed. Rep. of Germany, May 16, 1981, 3119597

Int. Cl.³ B08B *1/04*; B23Q *11/00*

U.S. Cl. 15—246 **9 Claims**



1. Apparatus for cleaning the internal taper of a machine spindle of the type having a clamping device therein comprising a truncated cleaning cone, a cleaning covering mounted on said cone, a supporting body, a mandrel fixedly mounted on said supporting body, said cone being rotatably mounted on said mandrel, means for effecting relative rotation between said cone and mandrel, and an extension on the end of said mandrel projecting through the smaller end of said cone and adapted to be cooperatively engageable by said clamping device in the spindle for detachably securing the apparatus on the spindle in the operating position.

4,468,835

AIR VIBRATED DUST BRUSH

William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz. 85014

Filed Dec. 20, 1982, Ser. No. 450,928

Int. Cl.³ A47L *9/06*, *9/08*

U.S. Cl. 15—381 **7 Claims**

1. A fluid vibrated brush comprising:

a duct for receiving a stream of forced fluid and including;

an exit, and

first and second ports upstream of said exit,

a ribbon within said duct and folded to form

first and second segments each said segment having an end extending beyond the exit of said duct, and

a fold intermediate said first and second segments;

securement means for coupling said first and second segments together proximate said fold to form an attachment loop; and

a clip passing through said attachment loop and gripping said duct for suspending said ribbon within said duct.

4,468,836

DOOR DAMPENING MECHANISM HAVING A NON-ROTATABLE VANE

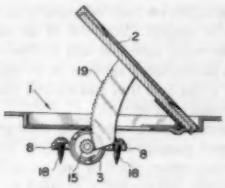
Nobuaki Omata, Hiroshima, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Nov. 27, 1981, Ser. No. 325,463

Claims priority, application Japan, Nov. 27, 1980, 55-168752[U]

Int. Cl.³ E05F *5/02*

U.S. Cl. 16—82 **5 Claims**



1. A three piece plastic damper means for a door, comprising a fitting member provided with a base plate and a support shaft raised perpendicularly from the center of said base plate, non-rotating resisting member provided with a hub fixedly mounted on said shaft and a multiplicity of vanes extending radially from the peripheral surface of said hub, and a cup-shaped rotary member integrally provided at its substantially closed end with a gear toothed wheel, said resisting member being fit into said rotary member, and said vanes being allowed to frictionally slide intimately on the inner wall surface of the rotary member.

4,468,837

APPARATUS FOR AUTOMATICALLY STUNNING ANIMALS TO BE SLAUGHTERED

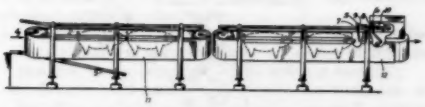
Johan W. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G.J. Nijhuis B.V., Netherlands

Continuation-in-part of Ser. No. 202,322, Oct. 30, 1980, abandoned, Ser. No. 161,298, Jun. 20, 1980, Pat. No. 4,353,147, Ser. No. 147,826, May 8, 1980, , Ser. No. 147,827, May 8, 1980, Pat. No. 4,338,700, Ser. No. 148,033, May 8, 1980, abandoned, and Ser. No. 148,034, May 8, 1980, Pat. No. 4,319,383, said Ser. No. 202,322, is a continuation of Ser. No. 905,371, May 12, 1978, abandoned. This application Sep. 4, 1981, Ser. No. 299,541

Claims priority, application Netherlands, May 18, 1977, 7905519; May 10, 1979, 7903678; May 10, 1979, 7903681; May 10, 1979, 7903677; May 10, 1979, 7903680; Jun. 25, 1979, 7904935

Int. Cl.³ A22B *3/06*

U.S. Cl. 17—1 E **15 Claims**



1. An apparatus for electrically stunning animals to be butchered, comprising:

a pair of endless conveyor belts, said belts being positioned to form a substantially V-shaped passageway therebetween, said V-shaped passageway being adapted to receive an animal, said belts being operable to run at a first synchronized rate, said belts being adapted to hold the animal fixedly with respect to said belts;

a floor beneath said belts, said floor being inclined downwardly, said floor having a distance between said floor and said belts, said distance between said floor and said

belts being generally increasing in the direction of movement of said belts;

a frame, said frame being adapted to support said belts;

a first electrode, said first electrode being supported by said frame, said first electrode being adapted to extend downwardly into said V-shaped passageway;

a second electrode, said second electrode being supported by said frame, said second electrode being electrically isolated from said frame, said second electrode being adapted to extend downwardly into said V-shaped passageway, said first and second electrodes being adapted to automatically engage the head of an animal supported between the belts, said first and second electrodes being adapted to permit the transmission of stunning current to the animal when said first and second electrodes simultaneously engage said animal;

the first and second electrodes being arranged side by side in the V-shaped passageway and being formed as mirror images of each other, the first and second electrodes having outer edges substantially parallel to and near to the conveyor belts to minimize the chances of an animal putting its head into the gap between an electrode and a belt, the first and second electrodes having curved inner surfaces which diverge from each other and then converge toward each other to form an opening through which an animal may place its head, thereby unintentionally seeking to place its head into a position for favorable electrical contact between the electrodes and the animal's head; and,

said belts, said floor, said frame, said first electrode and said second electrode being mutually cooperable to permit automatic stunning of the animal by moving the animal into engagement with said first and second electrodes while maintaining the animal in separate relation to other animals to be stunned and while preventing the animals from moving with respect to each other after the animals are received by said belts.

4,468,838

BIRD CUTTING PLANT

Stig Sjöström, and Allan Thörnqvist, both of Nybro, Sweden, assignors to Meyn Machinenfabriek, B.V., Oostzaan, Netherlands

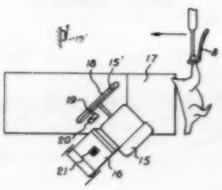
PCT No. PCT/SE81/00186, § 371 Date Feb. 22, 1982, § 102(e) Date Feb. 22, 1982, PCT Pub. No. WO82/00001, PCT Pub. Date Jan. 7, 1982

PCT Filed Jun. 24, 1981, Ser. No. 355,581

Claims priority, application Sweden, Jun. 24, 1980, 8004639

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—11 **7 Claims**



1. Bird cutting apparatus for cutting and separating parts of a bird in a bird processing plant of the type including an endless conveyor with equidistantly spaced apart bird suspension means from which the birds are suspended upside down for transport through at least one cutting station, said apparatus comprising:

each said suspension means including two generally U-shaped yokes secured to said conveyor;

said U-shaped yokes having generally U-shaped openings for receiving the lower legs of the bird, said U-shaped yokes generally facing one another generally transverse to the direction of conveyance;

said suspension means receiving the bird's lower legs with the connecting line of the yokes extending transversely of the direction of movement of the conveyor;

said yokes of said suspension means being spaced apart along said connecting line sufficiently so that said yokes hold the lower legs of a bird suspended in this manner stretched apart;

said spaced apart yokes holding the lower legs of a bird suspended to allow the bird to be freely swingable in the conveying direction while said lower legs are stretched apart and said suspension means is secured to said conveyor;

each said yoke including downwardly extending legs terminating in a forwardly bent bottom part;

guide means included in each said yoke extending upwardly and outwardly from said bottom part of said yoke for holding a distal enlarged end portion of the lower leg of said bird and for guiding the cut bird parts out of the yokes when subjected to a force opposite the force of gravity;

a plurality of cutting stations each including cutting means for cutting the birds in separated bird parts.

4,468,839

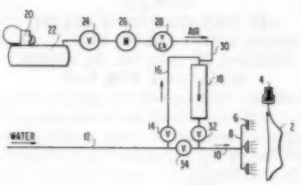
METHOD FOR WASHING ANIMAL CARCASSES

Jimmie A. Chittenden, Amarillo, Tex., assignor to IBP, Inc., Dakota City, Nebr.

Continuation of Ser. No. 153,798, May 27, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,411

Int. Cl.³ B08B *3/02*; A22B *5/00*; A22C *17/08*

U.S. Cl. 17—51 **2 Claims**



1. A method of washing contaminants from the surface of an animal carcass, comprising the steps of:

injecting a gas into a liquid to form bubbles in the liquid,

reducing the size of the bubbles by passing the bubble-containing liquid through a mixer which subjects the liquid and gas to high shear forces to divide the bubbles and reduce them to a size of about 10–100 microns, said liquid being pressurized and said bubbles having sizes such that a substantial amount of the gas becomes dissolved in the liquid,

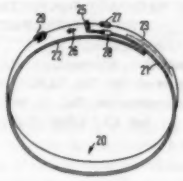
spraying the liquid onto an animal carcass, said liquid being depressurized when applied to the carcass to cause the dissolved bubbles to come out of solution.

lifting contaminants from the surface of the carcass, said lifting step being performed by said bubbles of reduced size after the liquid has been applied to the carcass, said bubbles migrating outwardly from the carcass to the ambient air to lift contaminants from the surface of the carcass.

4,468,840
CLAMP FOR HOSES OR THE LIKE

Heinz Sauer, Ronneburg, and Willi Stichel, Maintal, both of Fed. Rep. of Germany, assignors to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,375
Claims priority, application Fed. Rep. of Germany, May 5, 1980, 3017178
Int. Cl.³ B65D 63/02
U.S. Cl. 24—20 R 19 Claims

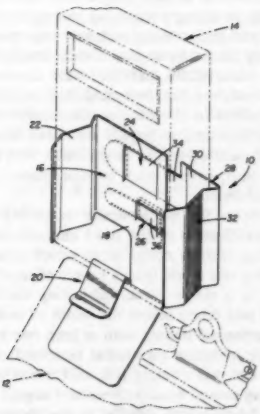


1. A clamp for hoses and analogous commodities, comprising an elongated band having two spaced apart end portions; means for maintaining said end portions in overlapped relationship so that the band forms a loop around a commodity; and means for facilitating tensioning of said band about a commodity within the loop, including an outwardly extending projection provided on one of said end portions and being plastically deformable in response to the application of a predetermined tensioning force acting lengthwise of the band; wherein said projection and said one end portion define a junction, and further comprising reinforcing means at said junction.

4,468,841
CLAMP FOR USE WITH A CLIPBOARD OR THE LIKE

Thomas H. Herington, 203 Reed Blvd., Mill Valley, Calif. 94941

Filed Sep. 30, 1982, Ser. No. 431,353
Int. Cl.³ B42F 1/00
U.S. Cl. 24—67 R 5 Claims



1. An adjustable, fastenable clamp for support of an object on a work surface comprising,

(a) a first formed member having:

a body portion,

means for releasably fastening said first member to said work surface,

means forming one side clamp of a two sided clamp for said object,

and separate aligned means for supporting and separate aligned means for releasably locking an element to said first formed member

said means for supporting comprising a slot-like form having sides and a back with entry and exit cut-out portions parallel to each other and to one side of said body portion,

said means for releasably locking comprising a slot-like form having sides and a back with entry and exit cut-out portions parallel to each other and to said entry and exit cut-out portions of said means for supporting, one side of said means for releasably locking being nonparallel to the other side so as to form a slot with a reducing cross-section dimension in a direction toward said means forming one side clamp,

(b) a second formed member having:

central portion,

means forming a second side clamp of said two sided clamp for said object,

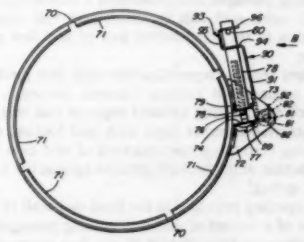
support means and locking means extending from said second formed member,

(c) said support means and locking means on said second formed member being formed to cooperate with said means for supporting and means for releasably locking on said first formed member so as to position said second side clamp to establish said two sided clamp with said one side clamp on said first formed member.

4,468,842
LOCKABLE BAND CLAMP

Kenneth R. Perry, Ottawa, and Alexander F. Campbell, Woodlawn, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 18, 1982, Ser. No. 442,595
Claims priority, application Canada, Jun. 18, 1982, 405463
Int. Cl.³ B65D 63/06
U.S. Cl. 24—279 14 Claims



1. A lockable band clamp for retaining two opposed rims in a clamped condition, comprising:

a flexible band for positioning around said rims and including a plurality of portions having a Vee-shaped cross-section, the Vee opening inwards to embrace said rims;

said flexible band having two cooperative ends, one end including a tubular member having an internally threaded portion at an inner end, said tubular member engaged with said one end of said band at said inner end, the other end of said flexible band including a rod having an externally threaded portion, the rod passing through said tubular member with said threaded portions interengaging;

each end of the flexible band having an end member attached thereto and adapted to overlap each other on tightening the clamp;

means for producing rotation of said tubular member to move said rod axially in the tubular member;

said means for producing said rotation comprising an elongate locking member having a first end engaged over an

outer end of said tubular member and rotatable about a longitudinal axis of the tubular member to an extent less than a single revolution;

said elongate locking member pivotally mounted on said outer end to move about an axis transverse to said longitudinal axis to an initial position where said locking member extends laterally to rotate said tubular member, and also movable to a further position wherein a second end of said locking member is in overlapping relationship with said end members when the clamp is tightened;

said end members and said second end including means for locking said second end to said end members.

4,468,843

COUPLING DEVICE FOR A BELT WITH AUTOMATIC SNAP-LOCKING AND EJECTION

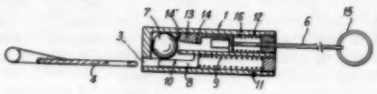
Didier A. Duclos, Maisons Alfort, and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, France

Filed Mar. 18, 1983, Ser. No. 476,664

Claims priority, application France, Mar. 18, 1982, 82 04633

Int. Cl.³ A44B *21/00*

U.S. Cl. 24—642 **4 Claims**



1. A coupling device for a belt with automatic snap-locking and ejection, which comprises:

(a) a case;

(b) two parallel guiding passages provided within said case;

(c) a free space provided between a front end-wall of the case and one end of said guiding passages;

(d) a snap-locking ball disposed with play within said free space;

(e) a locking element movable axially within a first of said guiding passages and presenting a forward portion engagable with said ball to move said ball transversely in relation to the longitudinal axis of said first guiding passage;

(f) a first spring disposed within said first guiding passage and urging said locking element toward a position in which said locking element engages said ball;

(g) a traction member rigid with said locking element and passing through a rear end-wall of said case to control a retraction of the locking element against the action of said first spring;

(h) an opening provided in the front end-wall of said case, in front of a second of said two guiding passages, said opening allowing introduction in said free space of said case a bored portion of a belt buckle engagable by said ball;

(f) a second spring disposed within said second guiding passage and bearing on a rear end-wall of said case, and

(j) an ejector disposed within said second guiding passage and having a rear portion engaging said second spring and a front portion of reduced height, said ejector sliding axially within said second guiding passage between a first position in which it does not engage said ball and compresses said second spring under the action of the belt buckle introduced into said case opening, and a second position corresponding to the ejection of the belt buckle in which the portion of reduced height of the ejector engages said ball to urge it transversely toward said locking element, thus allowing a next introducing of the belt buckle into the case opening, so that when introducing the belt buckle into the case opening the ejector is pushed rearwardly against the action of said second spring while said ball actuated by the spring-biased locking element moves within said free space to engage the bored portion of the belt buckle and to lock same, a pulling action exerted on said traction member freeing said ball from the locking element action and causing the ball to move under the action of the spring-biased ejector to release the bored-portion of the belt buckle which is then ejected from the case opening, said ball being maintained in this release position by the ejector to allow a next introducing of the belt buckle into the case opening.

4,468,844

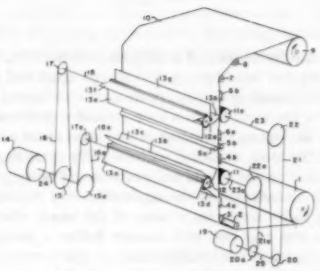
MECHANICAL SURFACE FINISHING PROCESS FOR TEXTILE FABRIC

Wolfgang K. F. Otto, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 92,815, Nov. 9, 1979, Pat. No. 4,316,928. This application Jul. 13, 1981, Ser. No. 282,446

Int. Cl.³ D06C *11/00*

U.S. Cl. 26—28 **8 Claims**



1. A process for mechanically achieving a substantially uniform modification of the hand characteristics of a textile fabric having fibrous components which comprises continuously feeding said fabric from a source of supply such that said fabric lies in a single plane, subjecting successive adjacent sections of said fabric across the width of said fabric to intermittent mechanical impact with at least one rotating abrasive roll thereby avoiding substantial sustained contact between said fabric and said rotating roll; said intermittent mechanical impact being caused by an intermittent impact means disposed across the fabric width, parallel to the abrasive roll near the reverse side of the fabric from said abrasive roll, thereby causing the portions of the fibrous components exposed to said intermittent mechanical impact with said abrasive roll to be substantially scarred and to be provided with a multiplicity of generally short, rather thick lamella shaped protrusions extending therefrom.

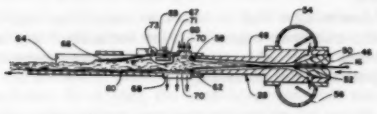
8. A process for mechanically achieving a substantially uniform modification of the hand characteristics of a textile fabric having fibrous components which comprises continuously feeding said fabric from a source of supply such that said fabric lies in a single plane, subjecting successive adjacent sections of said fabric across the width of said fabric to intermittent mechanical impact with at least one rotating abrasive roll thereby avoiding substantial sustained contact between said fabric and said rotating roll; said intermittent mechanical impact being caused by an intermittent impact means disposed across the fabric width, parallel to the abrasive roll near the reverse side of the fabric from said abrasive roll, wherein said abrasive roll is comprised of at least one rotatable roll covered with napping wire, thereby causing the portions of the fibrous components exposed to said intermittent mechanical impact with said abrasive roll to be substantially scarred and to be provided with a multiplicity of generally short, rather thick lamella shaped protrusions extending therefrom.

4,468,845

JET AND BUSTLE TOW BLOOMING APPARATUS FOR A TOW BLOOMING PROCESS

James E. Harris, Bristol, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 359,968, Mar. 19, 1982, Pat. No. 4,435,239.
This application Dec. 8, 1983, Ser. No. 559,617
Int. Cl.³ D01D *11/02*
U.S. Cl. 28—283 4 Claims



1. In a jet for treating filter tow, said jet having a rectangular-shaped nozzle assembly through which tow enters into said jet in banded form and a rectangular-shaped throat assembly connected to said nozzle assembly and defining a venturi-shaped passage having a width greater than said banded tow and in which said banded form of tow is caused to spread to a greater width upon being contacted by gases entering into said venturi-shaped passage and becoming confined in compressed form around said tow, the improvement comprising:

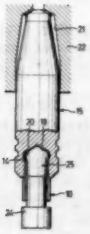
means connected at the outlet of said venturi-shaped passage and defining a rectangular shaped bustle chamber having inlet and outlet ends through which tow moves into and out of said bustle chamber from the venturi-shaped passage, said bustle chamber having therewithin adjustable tension means for engagement against said tow to rapidly decelerate and retard its movement through the bustle chamber, said bustle chamber along its length also defining outlet means extending through and across the width of the bustle chamber at a location between said inlet and outlet ends and before said tension means for enabling substantially most of the compressed gas surrounding and accompanying the tow as it moves into the bustle chamber to expand and escape from the bustle chamber and including means for restraining the tow from also escaping therethrough.

4,468,846

PROJECTILE CONTAINING A FLARE COMPOSITION SLEEVE AND METHOD FOR SECURING THE FLARE COMPOSITION SLEEVE IN A BORE AT THE TAIL OF A PROJECTILE BODY

Rudolf Rossmann, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Jul. 22, 1982, Ser. No. 400,662
Claims priority, application Switzerland, Aug. 5, 1981, 5042/81
Int. Cl.³ B21K *21/06;* B23P *17/00*
U.S. Cl. 29—1.23 4 Claims



1. A method for securing a flare composition sleeve, which comprises an end member with a substantially ring-shaped edge portion, in a bore provided at the tail of a projectile body, said bore defining a bore wall in which a substantially ring-shaped groove is formed said method comprising the steps of:

during a first method step pressing the flare composition sleeve into the bore with the aid of a pressing-in plug member such that said end member with said substantially ring-shaped edge portion thereof is located adjacent said substantially ring-shaped groove in said bore wall; and

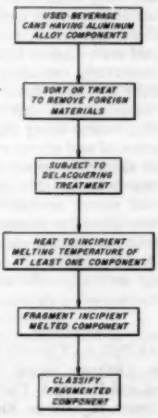
during a second method step widening said substantially ring-shaped edge portion of the end member of said flare composition sleeve with the aid of an elastically deformable plug member and a plugging insert until the substantially ring-shaped edge portion bears against the substantially ring-shaped groove so as to form a gas-tight interconnection between said flare composition sleeve and said projectile body.

4,468,847

METHOD OF SEGREGATING METALLIC COMPONENTS

Kenneth A. Bowman, Allegheny Township, Westmoreland County, Pa., and Chester L. Zuber, Evansville, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 31, 1982, Ser. No. 413,515
Int. Cl.³ B23Q *17/00*
U.S. Cl. 29—403.4 59 Claims


USED BEVERAGE CANS HAVING ALUMINUM ALLOY COMPONENTS
SORT OR TREAT TO REMOVE FOREIGN MATERIALS
SUBJECT TO DELACQUERING TREATMENT
HEAT TO INCIPIENT MELTING TEMPERATURE OF AT LEAST ONE COMPONENT
FRAGMENT INCIPIENT MELTED COMPONENT
CLASSIFY FRAGMENTED COMPONENT

1. A method of fragmenting and segregating metallic components fabricated from different aluminum wrought alloys, the method comprising the steps of:

(a) providing a feedstock containing at least two components therein comprised of different aluminum wrought alloys having different incipient melting temperatures;

(b) heating the feedstock to a temperature sufficiently high to initiate incipient melting of the component having the lowest incipient melting temperature;

(c) subjecting said heated feedstock to agitation sufficient to cause said component having the lowest incipient melting temperature to fragment; and

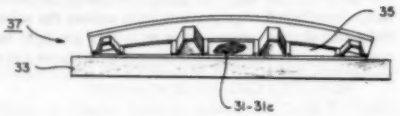
(d) segregating said fragmented components from the remaining feedstock.

4,468,848

METHOD OF MAKING COMBINATION CURVED-LIGHTWEIGHT MIRROR MODULE

Alfred J. Anderson, Littleton; David N. Gorman, Larkspur; James G. Halford, and Robert J. Thomas, both of Littleton, all of Colo., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 8, 1982, Ser. No. 355,855
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—526 R **6 Claims**



1. A method of preparing a mirror module for a heliostat or the like for reflecting solar energy onto a collector comprising the steps of:

a. preparing a plurality of different length sheet templates to induce a predetermined curvature to a mirror for said mirror module; said templates being sized so as to support said mirror at a plurality of predetermined lines;

b. emplacing said templates one on top of the other in stepped fashion on a firm planar support bed to support said mirror in curvature;

c. laying said mirror face down on said templates such that said mirror has said predetermined curvature for reflecting solar rays closely toward a target spot on said collector;

d. connecting a support structure with the backside of said mirror while supported on said templates so as to maintain said predetermined curvature; said connecting of said support structure being done by connecting a plurality of longitudinally extending beams having sufficient connecting surface and strength for supporting said mirror cantilevered from said main support system; and connecting a plurality of transversely extending beams connected to said longitudinally extending beams carrying said curved mirror while supported on said templates; said transversely extending beams being engineeringly placed to minimize distortion of said mirror module when attached;

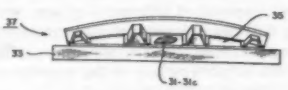
e. affixing to said support structure attachment beams for attaching to the heliostat structure whereby there is formed a curved mirror module having a lightweight mirror support structure that maintains the predetermined curvature to minimize thermal expansion effects and distortion effects and that effects a concentrated reflection of said solar energy onto said collector.

4,468,849

METHOD OF MAKING A CURVED MIRROR MODULE

Alfred J. Anderson, Littleton; David N. Gorman, Larkspur; James G. Halford, and Robert J. Thomas, both of Littleton, all of Colo., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 8, 1982, Ser. No. 356,105
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—526 R **2 Claims**



1. A method of preparing a mirror module for a heliostat or the like for reflecting solar energy onto a collector comprising the steps of:

a. preparing a plurality of different length sheet templates to induce a predetermined curvature to a mirror for said mirror module; said templates being sized so as to support said mirror at a plurality of predetermined lines;

b. emplacing said templates one on top of the other in stepped fashion on a firm planar support bed to support said mirror in said predetermined curvature;

c. laying said mirror face down on said templates such that said mirror has said predetermined curvature for reflecting solar rays closely toward a target spot on said collector;

d. connecting a support structure comprising longitudinal and transverse beams with the backside of said mirror while supported on said templates so as to maintain said predetermined curvature;

and

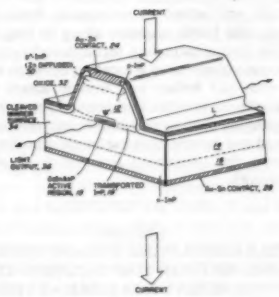
e. affixing to said support structure attachment means for attaching to said heliostat structure whereby there is formed a curved mirror module that minimizes thermal and distortion effects and effects a concentrated reflecting of said solar energy onto said collector.

4,468,850

GAINASP/INP DOUBLE-HETEROSTRUCTURE LASERS

Zong-Long Liau, Arlington, and James N. Walpole, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 29, 1982, Ser. No. 363,299
Int. Cl.³ H01L *21/208*
U.S. Cl. 29—569 L **36 Claims**



1. The method of forming a semiconductor device comprising the steps of:

(a) making a structure by:

(i) forming a substrate;

(ii) forming a first layer of semiconductor material over said substrate;

(iii) forming a second layer of semiconductor material on the first layer;

(iv) forming a coating over a portion of said second layer;

(b) removing a portion of said second layer on two adjacent sides of said protective coating down to the top surface of said first layer;

(c) removing a portion of said first layer underlying adjacent sides of said second layer so as to produce undercut areas beneath the remaining second layer with a volume of first layer therebetween, said volume of first layer having top, bottom and side walls, with two adjacent side walls thereby being exposed to the atmosphere; and

(d) heating the structure in a controlled environment to a temperature which causes the material in the regions of the undercut areas to travel into the undercut area and enclose the exposed side walls.

35. The method of forming a buried layer of quaternary III-V material in a heterojunction device having alternate

layers of quaternary III-V material and binary III-V material comprising the steps of:

(a) selectively etching only the binary material until a mesa of binary material is formed over the layer of quaternary material and a surface of quaternary material is exposed on two sides of said mesa;

(b) selectively etching only the quaternary material at the exposed surfaces until two undercut regions are formed under the mesa with a layer of quaternary material therebetween which is exposed on two sides; and

(c) filling in the undercut region with binary material from said mesa sufficient to bury the exposed portions of said quaternary material.

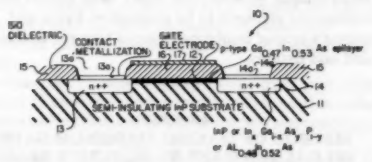
36. The method of claim **35** in which the filling in step (c) is accomplished by heating the heterostructure until material from the mesa migrates into the undercut region.

4,468,851

PROCESS FOR MAKING A HETEROJUNCTION SOURCE-DRAIN INSULATED GATE FIELD-EFFECT TRANSISTORS UTILIZING DIFFUSION TO FORM THE LATTICE

Herman H. Wieder, and Arthur R. Clawson, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 14, 1981, Ser. No. 330,281
Int. Cl.³ H01L *21/223, 21/20*
U.S. Cl. 29—571 **3 Claims**



1. A method of making an inversion mode metal-insulator-semiconductor field-effect transistor having heterojunction source and drain contact junctions comprising:

providing a semi-insulating InP semiconductor substrate;

growing a ternary alloy layer of p-type $Ga_{0.47}In_{0.53}As$ epitaxially on a portion of the semi-insulating InP semiconductor substrate;

coating the exposed semi-insulating semiconductor substrate and the ternary alloy layer with a dielectric;

opening source and drain contact windows through the dielectric coating and in contact with the ternary alloy layer;

exposing the open source and drain contact windows to a stream of phosphine and hydrogen while heating the p-type $Ga_{0.47}In_{0.53}As$ to about 750° C. for about 15 minutes to create a chemical reaction at the surface of the p-type $Ga_{0.47}In_{0.53}As$ producing a graded index heterojunction composed of InP through $In_xGa_{1-x}As_yP_{1-y}$ to $Ga_{0.47}In_{0.53}As$; and

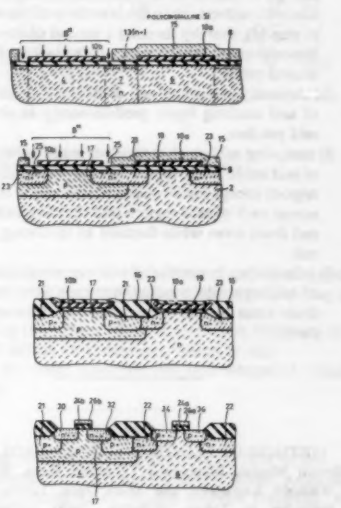
superposing a metal gate electrode on the dielectric coated ternary alloy layer in a region lying between the heterojunction source and drain contacts.

4,468,852

PROCESS FOR MAKING CMOS FIELD-EFFECT TRANSISTORS WITH SELF-ALIGNED GUARD RINGS UTILIZING SPECIAL MASKING AND ION IMPLANTATION

Gianfranco Cerofolini, Milan, Italy, assignor to SGS-Ates Componenti Elettronici S.p.A., Agrate-Brianza, Italy

Filed Apr. 5, 1983, Ser. No. 482,156
Claims priority, application Italy, Apr. 8, 1982, 20661 A/82
Int. Cl.³ H01L *21/22, 21/265*
U.S. Cl. 29—571 **14 Claims**



1. A process for making complementary MOS field-effect transistors with contiguous channel stops in a silicon substrate of one conductivity type overlain by an oxide layer, comprising the steps of:

(a) forming a first and a second patch of shielding material on said oxide layer above spaced-apart first and second regions of said substrate;

(b) injecting first impurities of said one conductivity type through said oxide layer into zones of said substrate immediately adjoining said first and second regions, including an intermediate section separating said first and second regions, thereby enhancing the conductivity of said zones over that of said substrate;

(c) covering said first patch and at least one immediately adjoining first zone of said oxide layer, including a portion thereof overlying part of said intermediate section, with a masking layer while leaving uncovered said second patch and at least one immediately adjoining second zone of said oxide layer, including a portion thereof overlying another part of said intermediate section;

(d) injecting second impurities of the opposite conductivity type through said second patch and through said second zone in a quantity sufficient to produce a well of said opposite conductivity type in said second region but insufficient to invert the conductivity in a substrate portion underlying said second zone enhanced by the first impurities injected in step (b);

(e) subjecting said substrate to a first heat treatment in a nonoxidizing atmosphere at a high temperature and for a time sufficient to let the first impurities injected in step (b) diffuse to a predetermined extent into said first and second regions while letting the second impurities of said second region diffuse deeper into the substrate;

(f) injecting more of said second impurities into said underlying substrate portion in a quantity sufficient to impart thereto a conductivity of inverted type enhanced over that of said second region while preserving the enhanced nonverted conductivity of a substrate portion in the vicinity of said first region to leave a channel stop of said one conductivity type next to a pedestal of substrate conductivity beneath said first patch;

(g) subjecting said substrate to a second heat treatment at a temperature lower than that of said first heat treatment in step (e) and for a time enabling the impurities injected in step (f) to diffuse to an extent expanding the area of enhanced conductivity to the boundary of the well produced in step (d), thereby forming a second channel stop of said opposite conductivity type next to said well beneath said second patch;

(h) thermally expanding said oxide layer, following removal of said masking layer, predominantly in areas free from said patches;

(i) removing said patches together with underlying portions of said oxide layer, thereby opposing said first and second regions except for a residue of said oxide layer extending across each of said regions and dividing same into source and drain areas while forming an insulating gate support; and

(j) introducing impurities of said one conductivity type and of said opposite conductivity type into the source and drain areas of said second and said first region, respectively.

4,468,853

METHOD OF MANUFACTURING A SOLAR CELL

Hiroshi Morita, Kanagawa; Taketoshi Kato, Tokyo; Hiroshi Washida, Kanagawa, and Akira Onoe, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 28, 1983, Ser. No. 489,384
Claims priority, application Japan, May 13, 1982, 57-79105
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **12 Claims**

1. A method of manufacturing a solar cell comprising the steps of:

providing a silicon substrate of a first conductivity type;

forming a first amorphous silicon layer including a dopant on said silicon substrate;

forming a second amorphous silicon layer without dopant on said first amorphous silicon layer; and

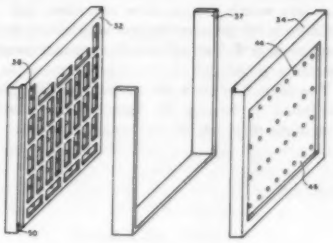
laser beam irradiating said second layer to cause the formation of a junction with said silicon substrate.

4,468,854

METHOD AND APPARATUS FOR MANUFACTURING THERMOELECTRIC DEVICES

Der-Jeou Chou, Troy, Mich., and Tetsuo Maruyama, Tokyo, Japan, assignors to ECD-ANR Energy Conversion Company, Troy, Mich.

Filed Apr. 29, 1982, Ser. No. 373,120
Int. Cl.³ H01L *21/68*
U.S. Cl. 29—573 **18 Claims**



1. A method of manufacturing a thermoelectric device comprising the steps of:

providing at least two fixtures;

providing a plurality of substantially planar conductive strips;

placing said plurality of substantially planar conductive strips in each of said two fixtures;

coating the exposed surface of each of said conductive strips with a first insulating material which exhibits low electrical conductivity and high thermal conductivity;

reversing said strips in said fixtures to expose a surface parallel to said coated surface;

coating said parallel surface with a solder paste;

providing a plurality of thermoelectric elements;

registering said fixtures one above the other and disposing said elements between said solder paste coated surfaces;

fastening said elements to be conductive strips; and

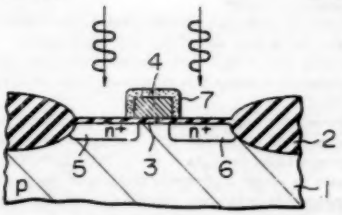
injecting a second insulating material between said elements and said fixtures.

4,468,855

METHOD OF MAKING ALUMINUM GATE SELF-ALIGNED FET BY SELECTIVE BEAM ANNEALING THROUGH REFLECTIVE AND ANTIREFLECTIVE COATINGS

Nobuo Sasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 4, 1982, Ser. No. 405,269
Claims priority, application Japan, Aug. 5, 1981, 56-122657
Int. Cl.³ H01L *21/265, 21/263*
U.S. Cl. 29—576 B **10 Claims**



1. A method for producing a semiconductor device formed on a semiconductor substrate of a first conductivity type, comprising the steps of:

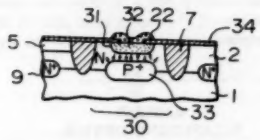
(a) forming a gate insulating layer on the semiconductor substrate;
(b) forming an aluminum gate electrode on the gate insulating layer;
(c) forming an impurity doped region in the semiconductor substrate by doping the semiconductor substrate with an impurity having a second conductivity type opposite that of the first conductivity type, using the aluminum gate electrode as a masking material;
(d) covering at least the upper surface of the aluminum gate electrode with an insulating layer; and
(e) annealing the impurity doped region by irradiating a beam on the impurity doped region and the aluminum gate electrode.

4,468,856

METHOD FOR FORMING AN OHMIC CONTACT TO A SEMICONDUCTOR SUBSTRATE

Toshitaka Fukushima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 22, 1982, Ser. No. 360,660
Claims priority, application Japan, Mar. 23, 1981, 56-42058
Int. Cl.³ H01L *21/74, 21/76*
U.S. Cl. 29—577 C **10 Claims**



1. A method for producing a semiconductor device having a semiconductor substrate of a first conductivity type, comprising the steps of:
(a) forming a semiconductor layer having a first depth and having a second conductivity type opposite the first conductivity type on the semiconductor substrate;
(b) forming element forming regions in the semiconductor layer;
(c) isolating the element-forming regions from each other by means of passive isolation regions, each passive isolation region having first and second sides, and surrounding each of the element-forming regions;
(d) forming at least one groove in the semiconductor layer adjacent to the first side of the passive isolation regions;
(e) filling the at least one groove with a semiconductor material comprising impurities and having the first conductivity type;
(f) carrying out a heat treatment to create an ohmic contact between the semiconductor material and the semiconductor substrate; and
(g) depositing an electrode material on the at least one groove.

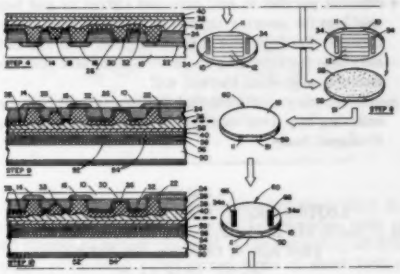
4,468,857

METHOD OF MANUFACTURING AN INTEGRATED CIRCUIT DEVICE

Raymond R. Christian, Oaklawn, and Joseph C. Zaercher, Wilmette, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Jun. 27, 1983, Ser. No. 508,317
Int. Cl.³ H01L *21/78, 21/95*
U.S. Cl. 29—577 C **3 Claims**

1. A method for manufacturing an integrated circuit device comprising the steps of:
(A) processing a silicon circuit wafer (10) to form an integrated circuit (12) and at least one alignment pattern (34) on a first surface of the circuit wafer (10);
(B) preparing the surfaces of a support wafer (50) for subsequent processing;
(C) positioning the first surface of the circuit wafer (10) opposing a first surface of the support wafer (50);
(D) forming a layer of adhesive (58) on the opposing first surfaces of said circuit (10) and said support (50) wafers so as to cause the two wafers to adhere together forming a wafer sandwich (60);



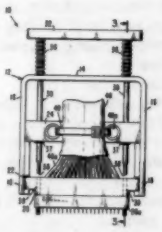
(E) photoshaping the circuit wafer to create an opening (66) therein to expose alignment indicia (34*a*) corresponding to the alignment pattern (34);
(F) processing the surface of the circuit wafer (10) using the alignment indicia (34*a*) exposed in Step E; and
(G) slicing the wafer sandwich (60) into integrated circuit chips (62).

4,468,858

TOOL FOR SEPARATING MATED CONNECTORS

Norman B. Gulberg, Encinitas, and Richard J. Busby, Anaheim, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif., by said Norman B. Gulberg

Filed May 18, 1982, Ser. No. 379,394
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—764 **9 Claims**



1. A tool for separating mated connectors and their mating contacts without bending of the contacts or breakage of their connector bodies, in which electrical devices are coupled to one of the connectors, comprising:
a U-shaped body including a base and a pair of generally parallel legs extending from said base to terminal portions, said base having a pair of holes extending therethrough;
means on said terminal portions for securing the one connector to said legs;
a plunger assembly including a pair of push rods extending in parallel through the holes in said base to termini at said terminal portions, a coupling rigidly affixed to said rods for preventing independent movement thereof, and means associated with said rod termini for contact with a second of the connector halves, said plunger assembly slidable with linear movement in said U-shaped body for establish-

ing a normal position and an extended position of said rod termini and said means associated therewith, respectively at said terminal portions and extending therefrom;

means coupled to said plunger assembly and said U-shaped body for biasing said coupling away from said base, to position said rod termini and said means associated therewith in their normal position, and to restore said rod termini and said means associated therewith to their normal position;

a crossbar parallel to said base and affixed to and between said legs for assuring rigidity of said U-shaped body, said crossbar having holes therein aligned with the holes in said base for extension therethrough of said rods and for ensuring alignment thereof; and

means securing said electrical devices to said crossbar for relieving any stress exerted between said devices and said U-shaped body.

4,468,859

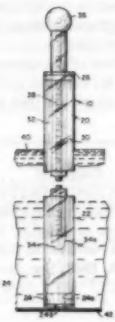
LIQUID DEPTH MEASURING DEVICE

Hal C. Baird, 813 E. Pennsylvania, Boise, Id. 83707

Filed Apr. 4, 1983, Ser. No. 482,023

Int. Cl.³ G01F *23/04*

U.S. Cl. 33—126.4 R **2 Claims**



1. A liquid depth measuring device, comprising

(a) a vertically arranged outer housing member formed of a transparent synthetic plastic material, said outer housing member including

(1) a tubular central body portion;

(2) means defining a downwardly tapered valve seat at the lower end of said central body portion, said valve seat having a fluid passageway therethrough; and

(3) means defining an annular sliding bearing at the upper end of said central body portion, said sliding bearing having an inner diameter which is less than that of said central body portion;

(b) a tubular inner housing member mounted for longitudinal sliding movement through said bearing and extending in concentrically spaced relation within said outer housing member, thereby to define an annular space between said inner and outer members, said annular space being in fluid communication with said fluid passageway, said inner housing member being vertically movable between lower and upper positions relative to said outer housing member, the length of said inner housing member being greater than that of said outer housing member;

(c) valve means carried by and closing the lower end of said inner housing member, said valve means having a downwardly convergent conical surface corresponding with that of said tapered valve seat for creating a fluid-tight seal when said inner member is in its lower position and said valve means is seated on said valve seat;

(d) a handle connected with the upper end of said inner housing member at a higher elevation than the upper end of said outer housing member;

(e) a graduated measuring tape arranged longitudinally within said inner housing member; and

(f) retaining means for retaining the inner housing member in its upper position, said retaining means including at least one pin member extending orthogonally from said inner housing member at a point which is lower than the elevation of the upper surface of said annular sliding bearing means when said inner housing member is in its lower position, said pin member extending a distance less than the width of said annular sliding bearing means, said annular sliding bearing means containing in its inner circumferential surface at least one vertical through slot corresponding with said pin member and being adapted to permit the passage of said pin member therethrough, whereby when said liquid depth measuring device is vertically inserted into a liquid receptacle in contact with the bottom thereof, and said inner member is lifted to its upper position with said pin member passing vertically upwardly through said slot, the passage through the valve seat is opened to supply liquid into said annular space to a height equal to that of the liquid in the receptacle, and when said inner housing member is rotated about its vertical axis, said pin member rests on the upper surface of said bearing means, and when said inner member is subsequently displaced to the lower position to close the valve seat passage, the height of the liquid contained in the annular space corresponds with the height of the liquid in the receptacle.

4,468,860

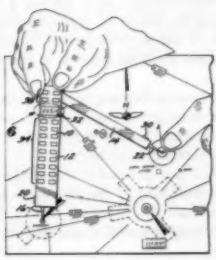
MEASURING DEVICE

Jeffrey L. Rodengen, 2560 Iris Way, Laguna Beach, Calif. 92651

Filed Mar. 8, 1982, Ser. No. 356,111

Int. Cl.³ G01B *3/16, 7/02*

U.S. Cl. 33—148 H **2 Claims**



1. A measuring device comprising in combination,

a main body having a first stylus fixed relative thereto,

an arm pivotally mounted on said main body and carrying a second stylus,

a source of electric power in said main body,

a potentiometer in said main body connected to said source of power and operatively interposed between said first and second styli to measure the angular relative position therebetween,

means including an electroresponsive display device on said main body in circuit with said source and operable to provide a display on said main body corresponding to the angular disposition of said styli as an indication of the lineal distance between said styli,

means on said main body for selectively altering the scale for the lineal distance between said styli, including a plurality of different electrical resistors and manually operable push button switches individually in circuit wherewith for connection in circuit with said potentiometer as desired

for selectively altering the electric parameters in circuit with said source and said display device,

said main body being formed with an elongated recess for receiving said arm and second stylus when said measuring device is in its stored condition and said second stylus is retracted,

and retractable mounting means for each of said styli comprising a spring-bias locking member which cooperates with a dent to effectively lock the respective stylus in operating position in said main body and arm respectively.

4,468,861

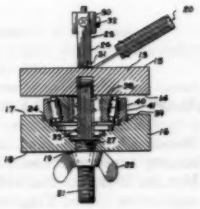
AXIAL THRUST BEARING THICKNESS MEASURING FIXTURE

Bert A. Overland, W. 2803 Lyond Ave., Spokane, Wash. 99208

Continuation-in-part of Ser. No. 185,127, Sep. 8, 1980, abandoned. This application Jan. 31, 1983, Ser. No. 462,196

Int. Cl.³ G01B *5/14*

U.S. Cl. 33—168 B **7 Claims**



1. An axial thrust bearing thickness measuring fixture for successively engaging individual annular bearing assemblies and for comparing their effective axial thicknesses to one another while the bearing assemblies are removed from their normal shaft placement, each bearing assembly having a central aperture formed about a bearing axis and two radial thrust surfaces axially spaced along the bearing axis; said fixture comprising:

a rigid base formed about a base axis;

a first planar surface on said base perpendicular to the base axis for engaging one thrust surface of a bearing assembly;

a rigid plate formed about a plate axis;

a second planar surface on said plate perpendicular to the plate axis for engaging a second thrust surface of a bearing assembly;

one of said planar surfaces being provided with an axially centered recess for clearing portions of a bearing assembly protruding axially outward beyond the thrust surface engaged by it;

said base further comprising a rigid fixed post centered along the base axis and protruding outwardly beyond said first planar surface;

said plate having an aperture formed therethrough having a cross-sectional configuration complementary to that of the post, said aperture being centered along the plate axis;

locking means engageable between said post and said plate for selectively applying a preselected axial clamping force against the two thrust surfaces of a bearing assembly arranged coaxially between the base and plate with its thrust surfaces engaged respectively by said first and second planar surfaces and with said post extending through its central aperture, the axial spacing between the base and plate then being a function of the bearing assembly thickness; and

reference means on said base and said plate, respectively, for indicating their relative axial positions with respect to one another when assembled with a bearing assembly between them.

4,468,862

FOOTBALL STENCIL

W. David Barnhill, P.O. Box 1053, Tifton, Ga. 31794

Filed Sep. 29, 1982, Ser. No. 427,909

Int. Cl.³ B43L *13/20*; G09B *15/06*

U.S. Cl. 33—174 B **7 Claims**

1. A football stencil for use in the graphic illustration on a substrate of various offensive football formations with the football players in proper positions at the beginning of offensive plays, comprising a flat stencil body of sheet material having formed therethrough a multiplicity of apertures positioned in spaced relationship in the stencil body and being representative of all of the customary offensive football players in their proper positions at the beginning of any offensive play, said stencil containing a sufficient number of apertures so arranged as to allow any one of a number of different offensive alignments to be selectively drawn, whereby a writing instrument can be employed through eleven selected apertures of the stencil body to graphically illustrate on the substrate the particular offensive football formation selected.

4,468,863

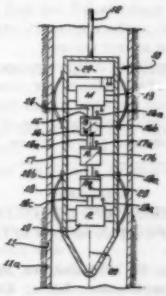
HIGH SPEED WELL SURVEYING

Donald H. Van Steenwyk, San Marino, Calif., assignor to Applied Technologies Associates, San Marino, Calif.

Filed Aug. 17, 1981, Ser. No. 293,159

Int. Cl.³ G01C *9/00*

U.S. Cl. 33—304 **5 Claims**



1. In a borehole survey method which employs first means for measuring angular rate, and second means for sensing tilt, said second means having at least two input axes of sensitivity, said first and second means having outputs, and a rotary drive for said first and second means, the steps that include

(a) operating the drive and the first and second means at a first location in the borehole, and while travel of said means lengthwise in the borehole is arrested, to determine the azimuthal direction of tilt of the borehole at such location,

(b) then traveling the first and second means and the drive lengthwise of the borehole away from the first location,

and operating the drive and at least one of the first and second means during such traveling to determine changes in borehole alignment which occur during traveling,

(c) said (b) step including operating the drive to adjust and maintain one of said input axes horizontal during said traveling,

(d) said (b) step also including integrating the output of said first means to determine changes in borehole azimuth during said traveling.

4,468,864

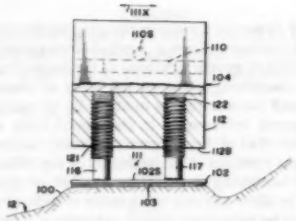
TILT METER

James A. Westphal, Altadena, and Michael A. Carr, La Crescenta, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 5, 1982, Ser. No. 365,261

Int. Cl.³ G01C 9/06

U.S. Cl. 33—366 **17 Claims**



1. In a tilt meter of the type which includes at least one sensor forming at least one resistor whose resistance varies according to tilting of the sensor, and means for connecting the resistor of the sensor and other resistors in a Wheatstone bridge arrangement having two sets of terminals, power means for applying an AC signal to a pair of terminals of the bridge, and circuit means connected to the other pair of terminals of the bridge for providing an output of a magnitude related to the tilt magnitude and a polarity related to the tilt direction of the sensor, the improvement wherein:

said AC signal is a square wave, and said bridge responds to said AC signal to produce spike-shaped pulses due to the transitions of said square waves;

said circuit means includes detector means for providing said output and means for inhibiting the passage of signals from said bridge to said detector means during a preselected period starting with each transition of said square wave shaped signal from said power means.

4,468,865

COLD AIR MICROWAVE DRYING APPARATUS

Makoto Inagaki, Tokyo, Japan, assignor to Techno Venture Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1981, Ser. No. 304,985

Claims priority, application Japan, Oct. 7, 1980, 55-142346[U]

Int. Cl.³ F26B 23/08

U.S. Cl. 34—1 **2 Claims**

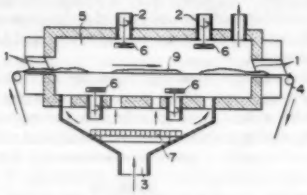
1. Apparatus for drying food products, comprising a drying chamber having a product inlet port, and a product outlet port;

a movable foraminous belt for transporting food products through said chamber in a horizontal direction between said inlet and outlet ports;

waveguide means for directing microwave energy toward said belt to heat food products thereon;

a cold air inlet port below said chamber;

adjustable baffle means disposed intermediate said cold air inlet port and said belt and below said belt for substantially uniformly directing cold air upwardly through said belt to dry food products thereon, said baffle means comprising a plurality of individually adjustable orthogonal baffles; and



sealing means for restricting the emission of microwave radiation from said product inlet and outlet ports.

4,468,866

METHOD OF AND APPARATUS FOR VACUUM DRYING OF SYSTEMS

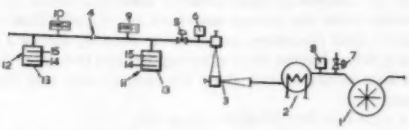
Clifford Kendall, Westhoughton, England, assignor to Hick Hargreaves & Company Limited, Bolton, England

Filed Nov. 30, 1982, Ser. No. 445,678

Claims priority, application United Kingdom, Nov. 30, 1981, 8136072

Int. Cl.³ F26B 5/04, 5/06, 13/30

U.S. Cl. 34—15 **8 Claims**



1. A method of vacuum drying a system to remove a liquid therefrom comprising the steps of:

positioning at least one sample of the liquid within at least one sample enclosure within the system;

monitoring the temperature differential between the sample positioned within the system and the free space adjacent that sample;

connecting the system to a vacuum producing means;

evacuating the system down to a practically achievable absolute pressure at a controlled rate so as to maintain the temperature differential between each sample within the system and the free space above that sample at or above a preset level, as the temperature of the free space approaches the freezing point of the liquid until evaporation of the sample is substantially complete;

isolating the system from the vacuum producing means;

allowing the temperature of the system to rise to facilitate sublimation or reevaporation of any frozen liquid remaining within the system;

monitoring the time taken for the pressure within the system to reach a steady state value;

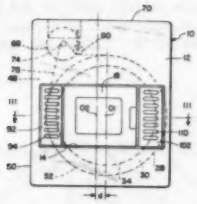
determining the sublimation rate or heat transfer rate of the system from the monitored time taken for the pressure within the system to reach the steady state value; and

evacuating the remaining liquid from the system at a rate below the determined sublimation rate or heat transfer rate of the system to prevent further freezing of the liquid remaining within the system.

4,468,867
DRYING APPARATUS

Satoru Iwase, Okazaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 23, 1981, Ser. No. 324,151
Claims priority, application Japan, Feb. 27, 1981, 56-28915
Int. Cl.³ F26B 11/02
U.S. Cl. 34—82 19 Claims



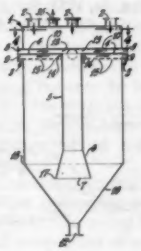
1. A drying apparatus, comprising:
a cabinet having a front panel and enclosing walls including at least top and side walls;
a drum having one open end and one closed end and having a horizontal axis disposed eccentrically inside of said cabinet, said closed end having through holes whereby an air path to said through holes is defined between one of said walls and the peripheral surface of said drum;
support means for rotatably supporting said drum inside said cabinet;
drive means for rotating said drum;
an opening disposed in the center of said front panel facing said open end of said drum for loading and unloading said drum;
a door operable for opening and closing said opening;
an air inlet port having an induction opening provided at a first portion of said front panel on one side of said opening in the center of said front panel and communicating with said air path;
an exhaust port having an exhaust opening having an exhaust opening provided at a second portion of said front panel, said exhaust port being positioned in alignment with at least a portion of said open end, said exhaust port also being off center relative to said drum and communicating with the interior of said drum directly through said open end of said drum, said exhaust port being positioned on the side of said opening opposite to said air inlet port; and
means housed in said cabinet for supplying hot air into the interior of said drum from air in said air path.

4,468,868
GAS-SOLID COUNTERFLOW VESSEL

Lee R. Mull, Newark, and Mark A. Propster, Gahanna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 30, 1982, Ser. No. 393,960
Int. Cl.³ F26B 17/14
U.S. Cl. 34—165 9 Claims

1. A gas to solids contacting apparatus comprising:
(a) a chamber;
(b) at least one solid inlet conduit having an opening into said chamber;
(c) at least one gas inlet conduit leading to, and in communication with, a gas inlet duct, the gas inlet duct being generally vertical, centrally located, and extending downward from the gas inlet conduit, and having an opening into said chamber, said gas inlet duct discharging into the lower portion of said chamber and terminating in a truncated cone;
(d) at least one gas outlet conduit having an opening into the top of the chamber;
(e) at least one bypass gas outlet conduit having an opening into the chamber intermediate the truncated cone opening of (c) and the top outlet opening of (d); and

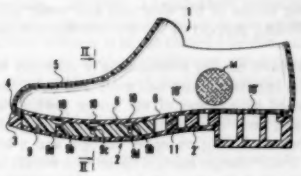


(f) the gas inlet conduit of (c) and bypass gas conduit of (e) being positioned in superimposed relationship.

4,468,869
FOOTWEAR

Sadao Fukuoka, 3-4, 2-chome, Shinminami-Fukushima, Tokushima-shi, Tokushima-ken, Japan

Filed Mar. 28, 1983, Ser. No. 479,440
Claims priority, application Japan, Oct. 26, 1982, 57-160992[U]
Int. Cl.³ A43B 7/06
U.S. Cl. 36—3 B 3 Claims

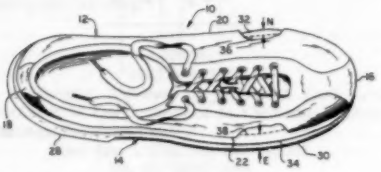


1. An article of footwear which comprises:
an upper;
an outer sole;
an inner sole affixed to said outer sole through the intermediary of said upper;
said inner sole and outer sole delimiting a vacant space therebetween;
said inner sole having a plurality of ventilating holes for communicating the vacant space with the interior of the article of footwear; and
a cushion member, consisting of a light-weight resilient material, disposed on said outer sole in said vacant space;
said cushion member having a plurality of elongated ribs spaced apart by a predetermined distance and extending up to the vicinity of an arch supporting portion of the article of footwear;
each of said elongated ribs having at least one recessed portion of a predetermined depth passing completely through said elongated rib substantially laterally thereof, each recessed portion being approximately registered with one of said ventilating holes,
each of said elongated ribs being provided, at each recessed portion thereof, with a substantially vertical bore having an upper end communicating with said recessed portion and having a lower end thereof and passing completely through said elongated rib substantially laterally thereof.

4,468,870
BOWLING SHOE

Joseph E. Sternberg, 2198 Sycamore Hill Ct., Chesterfield, Mo. 63017

Filed Jan. 24, 1983, Ser. No. 460,197
Int. Cl.³ A43B 5/00
U.S. Cl. 36—130 8 Claims



1. A bowling shoe comprising:

(a) an upper portion including inner and outer sides providing oppositely disposed longitudinally extending inner and outer lower side margin portions,

(b) a lower portion including a flexible sole having a substantially smooth side-facilitating underside, said lower portion including oppositely disposed longitudinally extending inner and outer side portions attached to corresponding lower side margin portions of the upper portion,

(c) said longitudinally extending inner side portion projecting outwardly of the attached inner side margin portion at the point of attachment and said longitudinally extending outer side portion projecting outwardly of the attached outer side margin portion at the point of attachment, for at least a substantial portion of the length thereof, a substantially greater amount than said opposite inner side portion to provide support for the outside edge of the foot of the wearer during play said smooth underside facilitating sliding action of the shoe and said outer side projection facilitating support of the foot during said sliding action, and

(d) said hole having a substantially constant thickness between oppositely disposed inner and outer margins at the point of attachment of the lower portion to the upper portion, and the longitudinally extending outer support portion including an upper margin and a lower margin said lower margin being disposed outwardly of said upper margin to define a tapered edge of the support portion to reduce weight and distribute forces more evenly.

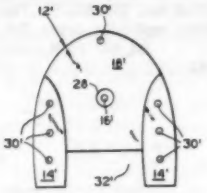
4,468,871
TAP DANCING SHOE TAPS

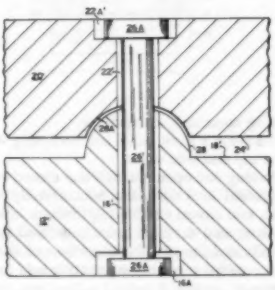
Stanley Winn, P.O. Box 1537, Long Island City, N.Y. 11101

Filed Oct. 15, 1982, Ser. No. 434,565
Int. Cl.³ A43B 5/12
U.S. Cl. 36—139 6 Claims

1. An improved shoe tap for tap dancing having a first member provided with at least two opposite raised side portions and a first through-bore disposed on a first central portion of said first member, a cut-out portion on said first member whose boundaries are defined by said portions of said first member and by said first central portion of said first member; a second member having a second through-bore disposed on a second central portion and containing a raised back portion; connecting means extending through said first and second through-bores so as to pivotally connect said first member to said second member for limited relative movement to each other wherein the improvement comprises:

a raised hemispherical protrusion coaxially disposed relative to one through-bore of one central portion of one member; and a concave spherical recess coaxially disposed relative to the other through-bore of the other central portion of the other member; said spherical surfaces being mutually contacting, so that one member being pivotally mounted to the other member can pivot freely in all directions to a limited extent about said connecting means and about said mutually contacting spherical surfaces within



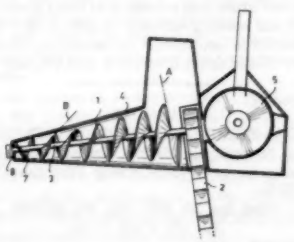


the confines of said raised side portions of said first member thereby increasing the tapping effect.

4,468,872
PEAT MACHINE

Gunnar Korte, Ylivieska, Finland, assignor to Kortteen Konepaja G. Korte & Kni, Ylivieska, Finland

Filed Feb. 16, 1983, Ser. No. 466,734
Claims priority, application Finland, Mar. 17, 1982, 820920
Int. Cl.³ E21C 49/00
U.S. Cl. 37—3 3 Claims



1. A peat machine for connection to a power source such as a tractor, said peat machine comprising a digging means for digging peat and a pressure screw disposed so as to move peat dug by said digging means, the pressure screw having a shaft and a thread extending about said shaft, said thread being conically shaped so that its diameter diminishes in a direction away from said digging means, the inclination of said thread with said shaft decreasing along a direction away from said digging means, the angle of inclination of said thread relative to said shaft at a first location adjacent said digging means being at least 90° and the angle of inclination of said thread relative to said shaft at a second location spaced downstream

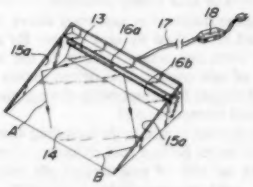
with respect to the movement of peat by said pressure screw from the first location being less than 90°, said angles being measured from the side of the thread facing the base of the cone .

4,468,873

DESKTOP FILM VIEWER

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Jul. 26, 1982, Ser. No. 402,070
Claims priority, application Japan, Jan. 26, 1982, 57-10446
Int. Cl.³ G02B *27/02, 27/04*
U.S. Cl. 40—361 **5 Claims**



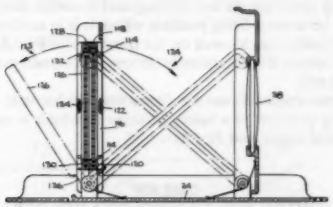
1. A film viewer, comprising a wedge-shaped box having a bottom wall, an inclined top with a diffusion plate fitted therein so as to face the bottom wall, and a sidewall enclosing a space between the bottom wall and the top, said sidewall including a rectangular portion defining largest spacing from the bottom wall to the top and two opposing tapered portions extending away from the rectangular portion; a light source fixed in said box in the proximity of said rectangular portion of the sidewall so as to illuminate said diffusion plate; a main reflector fixed to inside surface of said bottom wall; sub-reflectors fixed to the inside surfaces of said tapered portions of the sidewall; and a pair of auxiliary reflectors disposed on opposite sides of said light source at such inclinations that the auxiliary reflectors reflect light beams from the light source toward said main reflector and said sub-reflectors so as to direct the light beams toward those portions of said diffusion plate which are distant from the light source, whereby uniform brightness is provided on the diffusion plate.

4,468,874

IDENTIFICATION LOCKET

Rudolph J. Chiodo, West Hempstead, N.Y., assignor to Dimedco, New Rochelle, N.Y.

Filed Jun. 10, 1983, Ser. No. 456,714
Int. Cl.³ G02B *27/04*
U.S. Cl. 40—365 **1 Claim**



1. An identification locket for storing and displacing miniature transparent transcripts of identification information, said locket comprising:

(a) a case having a back and a cover, the cover being mounted on a first shaft positioned adjacent one end of said back for rotation between a closed position wherein the cover is parallel to said back and is positioned between the one end and the other end of said back, and an open position wherein the cover is perpendicular to said back;

(b) a magnifying lens mounted in said cover;

(c) a frame mounted on a second shaft positioned adjacent the other end of said back for rotation between a closed position wherein the cover is parallel to said back and between the ends of said back, and an open position wherein the cover is perpendicular to said back, wherein said frame is enveloped between the back and said cover when said frame and cover are in the closed position, said frame having a pair of parallel edge flanges and a wall therebetween, the flanges having detent means and the wall having an opening;

(d) a first retainer for releasably holding in a predetermined position therein a first transparent transcript, said first retainer being removably held to said frame by the detent means and rotatable independent of said frame about the second shaft between the closed position of said frame and the open position of said frame;

(e) a second retainer for releasably holding in a predetermined position therein a second transparent transcript, said second retainer being removably held to said frame by said detent means and rotatable independent of said frame and said second retainer about the second shaft between the closed position of said frame, the open position of said frame, and a third position parallel to the back of said casing and opposite to the closed position, wherein said first and second retainer abut each other and both are perpendicular to said back when said first and second retainer are in the open position, and wherein said first and second transparent transcripts are displayed simultaneously and parallel to said magnifying lens when said first and second retainer are in the open position, said first transparent transcript is displayed when said first retainer is in the open position and said second retainer is in the third position, said second transparent transcript is displayed when said second retainer is in the open position and said first retainer is in the closed position, and neither said first nor said second transparent transcripts are displayed when said first and second retainers are in the closed position;

(f) first spring means for urging said cover toward the open position;

(g) second spring means for urging said frame toward the open position; and

(h) support means for maintaining said frame at a fixed distance from said cover and for preventing movement between said frame and cover when said frame and cover are in the open position.

4,468,875

CARTRIDGE MAGAZINE FOR DIRECT EJECTION OF A CARTRIDGE INTO THE FIRING CHAMBER OF A FIREARM

Edwin L. Harrison, Whittier, and Ronald D. Retzlaff, Anaheim, both of Calif., assignors to Creative Metal Forming, Inc., Anaheim, Calif.

Filed May 20, 1982, Ser. No. 380,097
Int. Cl.³ F41C *25/02, 25/00*; F41D *10/12*
U.S. Cl. 42—50 **10 Claims**

1. In a magazine for firearms having a clip portion adapted to snap-fit into the receiver portion of a firearm and adjacent the breach of the firing chamber thereof and to selectively present cartridges carried thereby into position for direct ejection therefrom into such firing chamber, the improvement comprising:

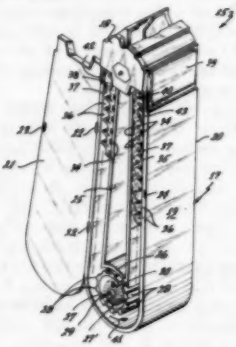
said magazine including an elongated housing extending from said clip portion having an outer peripheral wall, a rear wall closing off the back of said housing and a front wall closing off the front of said housing thereby providing an enclosed chamber extending from said clip portion to said housing portion;

a first drum rotatably mounted internally of said chamber within the clip portion to be disposed at the breach end of said chamber;

a second drum rotatably mounted internally of said chamber at the other end of said housing opposite said first drum;

each of said drums having a plurality of spaced gear teeth about the outer peripheries thereof, one of said drums being an idler drum, the other of said drums being a drive drum; and

an endless belt encircling said drums and having spaced gear teeth on the interior thereof directly engaging and meshing with the gear teeth on said drums whereby rotation of said drums rotates said belt;



said belt being spaced from the inner walls of said outer peripheral wall and having one end thereof entering said clip portion wrapping around said first drum past said chamber and having a plurality of spaced cartridge receiving chambers extending along the outer periphery of said belt, each of said cartridge receiving chambers being generally concave in cross-section and extending across the outer peripheral face of said belt in an axial direction generally normal to the direction of rotation of said belt when said belt is rotated by said drums; and

motive means engaging said drive drum for rotating said drive drum thereby rotating said belt to present selective ones of said cartridge receiving chambers on said belt into the interior of said clip portion for direct ejection of a cartridge therein directly into the firing chamber.

4,468,876

REVOLVER OF ELEVATED LOADING CAPACITY

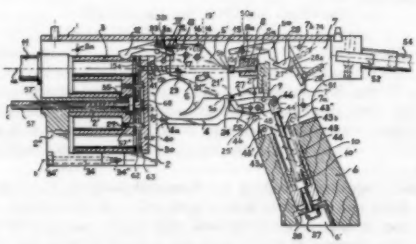
Emilio Ghisoni, Via Villa Serafina, 4, Pavia, Italy

Filed Jun. 9, 1982, Ser. No. 386,590

Claims priority, application Italy, Jun. 10, 1981, 22231 A/81

Int. Cl.³ F41C *1/00*

U.S. Cl. 42—65 **14 Claims**



1. A revolver comprising:

a body provided at a rear end thereof with a pistol grip and at a front end thereof with a forwardly projecting barrel;

a frame secured to the front end of said body and disposed in a substantially vertical plane extending in the direction of said barrel;

a cylinder with a multiplicity of cartridge chambers rotatable within said frame about a shaft paralleling said barrel, said cylinder having a multiplicity of rotary positions in which a respective chamber thereof is aligned with said barrel;

a trigger disposed between said frame and said pistol grip substantially at the level of said shaft, said trigger being swingable parallel to said vertical plane about a fulcrum on said body substantially at the level of said barrel;

detent means engageable with said cylinder for arresting same in any of said rotary positions;

stepping means disposed in said body above the level of said barrel and controlled by said trigger for advancing said cylinder from one rotary position to the next upon a retraction of said trigger, said detent means being coupled with said trigger for temporarily disengaging said cylinder during said retraction; and

a firing mechanism in said body including a striker pin in line with said barrel behind said cylinder, a hammer engageable with an end of said striker pin remote from said cylinder, said hammer being swingable about a pivot located substantially on the level of said trigger and being operatively coupled with said trigger upon retraction thereof for swinging from a normal position adjacent said striker pin into a withdrawn position remote from said striker pin with subsequent decoupling of said hammer from said trigger; and

spring means connected with said hammer for driving same against said striker pin upon the decoupling thereof from said trigger.

4,468,877

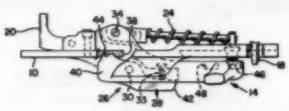
SIDE HAMMER PERCUSSION LOCK

Gary E. Karvonen, 335 S. 11th St., St. Helens, Oreg. 97051

Filed Jan. 13, 1983, Ser. No. 457,657

Int. Cl.³ F41C *17/00*

U.S. Cl. 42—70 F **12 Claims**



1. A hammer assembly for a side hammer percussion lock on a firearm, comprising:

(a) a hammer;

(b) first pivot means for rotating said hammer about a first axis between a firing position where it is in contact with a percussion cap located on the firearm, and a cocked position where it is rotationally removed from said percussion cap; and

(c) displacement means for displacing said hammer from its firing position to a safety position in which it cannot be rotated about said first axis.

4,468,878

OUTRIGGER FISHING ROD HOLDER

Raymond J. Maher, 682 Cedar La., Teaneck, N.J. 07666

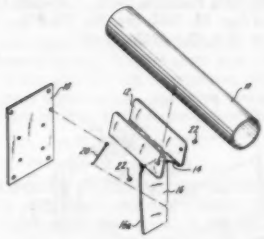
Filed Dec. 30, 1982, Ser. No. 454,604

Int. Cl.³ A01K *97/10*

U.S. Cl. 43—21.2 **1 Claim**

1. An outrigger fishing rod holder for mounting in or on the hull of a fishing vessel for holding a fishing rod in a fixed position until a catch is made comprising a length of cylindrical tubing for slideably receiving a fishing rod wherein said length

of cylindrical tubing has a pin extending therethrough near one end thereof which engages a slot formed in the end of a fishing rod handle such that when the fishing rod is inserted into the opposite end of said length of cylindrical tubing said rod will be secured against rotation; an elongated U shaped holding bracket pivotably supporting said length of cylindrical tubing adjacent its rearward end wherein said U shaped holding bracket has a semicircular cut out portion formed in the rearward end of the base of said U shaped holding bracket and wherein said semicircular cut out portion is large enough to accommodate the diameter of said length of cylindrical tubing; a mounting bracket extending downwardly from said base of said U shaped holding bracket adjacent said rearward end, wherein said mounting bracket has a tapered portion extending downwardly thereof for attachment to a mounting plate by



means of a plurality of rivet head type fastening devices which are spaced to receive the said tapered portion of said mounting bracket and which extend through openings formed through said mounting plate for the purpose of slidably receiving said tapered portion of said mounting bracket wherein a spring has an end thereof attached to said mounting plate and another end engaging a notch formed in said tapered portion of said mounting bracket to further secure in place said mounting bracket and therefore said U shaped holding bracket, and wherein said mounting plate is attached in or on the hull of a fishing vessel whereby said length of cylindrical tubing can be rotated upwardly and inwardly of said fishing vessel about pivot pins which are inserted through openings formed through the vertical portions of said U shaped holding bracket and through mating holes formed through said length of cylindrical tubing.

4,468,879

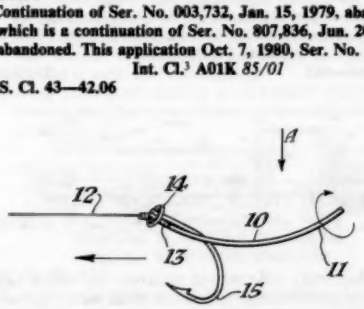
FISHING LURE

Jay S. Anson, 604 NE. 29 Drive Apt. C, Fort Lauderdale, Fla. 33334

Continuation of Ser. No. 003,732, Jan. 15, 1979, abandoned, which is a continuation of Ser. No. 807,836, Jun. 20, 1977, abandoned. This application Oct. 7, 1980, Ser. No. 194,740

Int. Cl.³ A01K *85/01*

U.S. Cl. 43—42.06 **1 Claim**



1. A fish lure, comprising:

a curved body of generally flat sheet of material of generally uniform thickness with head, trunk, and tail portions, said body having an elongated shape with two ends,

a first opening in one end nearest said tail portion and second opening in the other end of said body,

an elongated opening positioned centrally in said body, said elongated opening lying generally along the longitudinal center line of said body generally at the narrowest part of said body,

said body tapering from a smallest width adjacent said elongated opening toward a larger width adjacent the head and tail portions of said body,

said tail portion includes projecting fins,

a hook including an eye at one end and a barb at the other end, said hook connected to said first opening of said body, and said body sized and shaped to spin about the longitudinal center line of said body when towed through the water in one longitudinal direction,

said body sized and shaped to wobble in a vertical motion and wiggles in a horizontal motion when towed through the water in the opposite longitudinal direction,

said hook has shank portion between said eye and said barb, said eye of said hook is connected to said first opening and said shank portion is connected through said elongated opening.

4,468,880

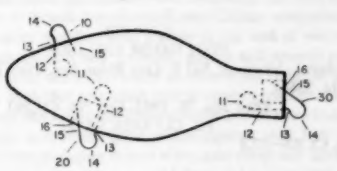
HOOK ATTACHMENT/LINE TIE

Daniel P. Olszewski, R3, Box 972, S. Merrit Island, Fla. 32952

Continuation of Ser. No. 143,326, Apr. 24, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 352,003

Int. Cl.³ A01K *85/00*

U.S. Cl. 43—42.08 **4 Claims**



1. A fishing lure with a hook hanger/line tie apparatus, comprising:

a formed wire including:

a first straight segment (**12**) of said wire;

a first loop (**11**) formed in said wire at one end of said first straight segment wherein said first loop describes an arc of at least 180°, said first loop forming a first end termination of said formed wire;

a bend (**13**) of less than 90° in said wire at the end opposite said first loop and in a direction opposite said first loop, creating an open angle greater than 90° between said first straight segment and the remaining wire after said bend;

a second loop (**14**) in said wire forming a semi-circle of 180° plus or minus 45°, said second loop formed after said bend and curved in a direction opposite the curve of said bend;

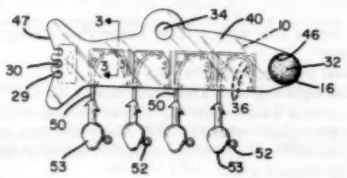
a second straight, segment (**15**) of wire at the open end of said second loop, said second straight segment of wire forming a second end termination of said formed wire; and

a fishing lure body including an internal channel means identical in size and shape to said first straight line segment and said first loop for embedding and rigidly securing in said body said first straight segment and said first loop of said formed wire in an orientation such that said second loop and a portion of said second straight end segment of said formed wire is held external to said body.

4,468,881
SKIRTED PLASTIC WORM
Leslie L. Gordon, III, 603 St. Monica, Cahokia, Ill. 62206
Filed May 17, 1982, Ser. No. 378,617
Int. Cl.³ A01K *85/00, 85/01*
U.S. Cl. 43—42.25 **10 Claims**

1. A plastic worm fishing lure comprising an elongated soft flexible plastic worm body having a head at one end, and a tail at a second end of the body, said body supporting a skirt attached to the body intermediate the head and tail of said worm, said skirt being comprised of an inner skirt and an outer skirt section each comprising flexible rubber-like strands, said inner skirt extending in a rearward direction with respect to the plastic worm body from means connecting the skirt to said body and said outer skirt extending forwardly from said connecting means and being doubled over said inner skirt when the lure is pulled through the water, said outer skirt being substantially longer than said inner skirt and extending beyond a rear portion of said inner skirt when the outer skirt is doubled over said inner skirt.

4,468,882
FISH HOOK HOLDER
Stephen A. Marusak, 537 E. Oak Ridge Ave., New Port Richey, Fla. 33552
Filed Sep. 30, 1982, Ser. No. 431,841
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—57.1 **6 Claims**

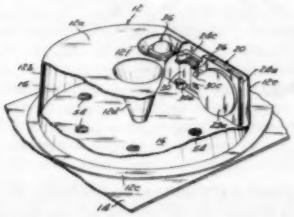


1. A holder for fish hooks which comprises a substantially planar first base having a substantially planar first surface, an opposed substantially planar second surface, and opposed first and second side edges, said first surface having a plurality of first recesses therein, each said recess having a substantially planar floor which is parallel to said first planar surface at a certain distance therebelow, each said recess communicating with said first side edge, each said recess being bounded by an endwall opposite said first side edge and opposed first and second sidewalls which extend between said endwall and said first side edge, said holder having means for retaining the arcuate end of a fish hook in each recess,

a substantially planar cover having a first planar surface and an opposed second planar surface, said second planar surface being adhered to said first planar surface of said base, each recess being open only at said first edge of said base,

said fish hook holder being substantially elongate, said holder having a first end and an opposed second end, said first and second side edges extending therebetween, said base and said cover having like profiled edges proximate said second end, said holder further comprising a razor blade sandwiched between said first surface of said base and said second surface of said cover, said blade having a sharp edge which extends beyond said end edges of said cover and base.

4,468,883
MOUSE TRAP
Charles G. D. Williams, Rolling Hills Estates, Calif., assignor to Environamentally Safe Products, Corp., Torrance, Calif.
Filed Apr. 19, 1982, Ser. No. 369,472
Int. Cl.³ A01M *23/18*
U.S. Cl. 43—61 **37 Claims**



1. A mouse trap comprising:

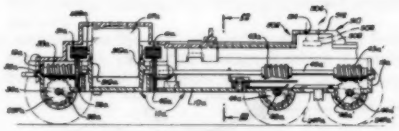
walls defining a continuous loop passage for receiving a mouse;

an entry through which the mouse may enter the passage;

a door for the entry; and

means for mounting the door so that it is movable between an open position wherein the mouse may enter the passage, but the door blocks the passage in one direction so that the mouse is guided in the other direction into the passage, and a closed position wherein the entry is closed and the door no longer blocks the passage.

4,468,884
MINIATURE TOY VEHICLE DRIVEN AT THREE AXES
Adolph E. Goldfarb, 1432 SE. Wind Cir., Westlake Village, Calif. 91361, and Delmar K. Everitt, Woodland Hills, Calif., assignors to Adolph E. Goldfarb, Northridge, Calif.
Continuation-in-part of Ser. No. 121,645, Feb. 14, 1980, Pat. No. 4,306,375. This application Dec. 22, 1981, Ser. No. 333,466
Int. Cl.³ A63H *17/00*
U.S. Cl. 446—462 **25 Claims**



1. An electrically self-powered miniature toy vehicle capable of climbing over rough terrain and obstacles as well as up steep inclines, said vehicle having major weight components positioned to provide weight in a generally balanced and relatively low arrangement while also providing adequate ground clearance in the area between the front and rear wheels, said vehicle comprising:

a frame;

at least three wheel means mounted to the frame for rolling rotation about respective mutually parallel but spaced-apart axes, such axes being in front of each other and there being at least one front axis spaced from at least one rear axis;

an electric motor mounted to one side of the frame between said at least one front axis and said at least one rear axis and having a driveshaft which is perpendicular to the axes and extends both fore and aft from the motor;

means for supporting a pair of AA batteries disposed end-to-end along the other side of the frame and for electrically connecting the batteries to the motor; the batteries and motor being at generally the level of said wheel axes; and the frame, the motor and the batteries not extending appreciably below the level of the axes in the space between said at least one front axis and said at least one rear axis;

three worms mounted parallel to the driveshaft and driven respectively from the fore and aft extensions of the driveshaft; and

three worm gears rotatably mounted to the vehicle, with their axes of rotation parallel to the axes of wheel rotation; each worm gear driving a respective one of the said at least three wheel means, and being meshed with and directly driven from a respective one of the three worms.

4,468,885

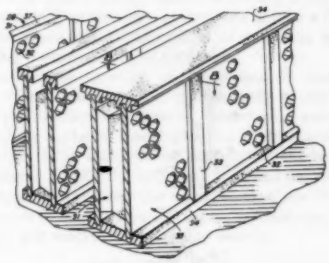
HYDROPONIC SYSTEM WITH FLOATING PLANT TRAYS AND PRECAST CONCRETE SIDEWALLS

Theodore O. Mandish, 5055 State Rd. 46, Mims, Fla. 32754

Continuation of Ser. No. 426,652, Sep. 29, 1982, abandoned, which is a division of Ser. No. 299,806, Oct. 26, 1982, Pat. No. 4,355,484. This application Oct. 6, 1983, Ser. No. 539,707

Int. Cl.[3] **A01G** *31/00;* **A01K** *61/00*

U.S. Cl. 47—59 **8 Claims**



1. A hydroponic system comprising in combination:

a liquid reservoir having lightweight concrete wall sections connected together to form said reservoir;

marine organism habitat means formed in each said concrete wall section and including a plurality of open cavities formed in each wall section; and

floating plant trays floating in said liquid reservoirs, said floating trays having a soil mixture therein for the growth of plants.

4,468,886

WALL MOUNTABLE SAFETY HATCH

George A. Tew, Box 398, Pawhuska, Okla. 74056

Filed Jun. 29, 1983, Ser. No. 508,940

Int. Cl.[3] **E05B** *65/10;* **E06B** *1/04*

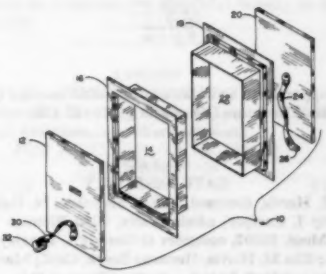
U.S. Cl. 49—141 **5 Claims**

1. A wall mountable safety hatch comprising:

(a) a first wall mountable frame comprising a first closed-loop flange member adapted to mount against an inner wall and surround an opening in the wall through which a human can escape, a first door engaging means attached to the interior perimeter of said first flange member, and a first closed-loop sidewall member having one end attached to said first door engaging means, thus extending away from said flange member and substantially through the opening in the wall;

(b) a second wall mountable frame comprising a second closed-loop flange member adapted to mount against an exterior wall and surround an opening in the wall through which a human can escape, a second door engaging means attached to the interior perimeter of said second flange member, and a second closed-loop sidewall member having one end attached to said second door engaging means thus extending away from said flange member and substantially through the opening in the wall;

(c) an outer door means comprising an exterior wall member and first strap member with connector at one end of said



first strap member and the other end of said first strap member attached to the inside surface of said exterior wall member; and

(d) an inner door means comprising an interior wall member having an opening to allow said connector and first strap member to thread therethrough, and further comprising a second strap member with a clasp at one end of said second strap member and the other end of said second strap member attached to the inside surface of said interior wall member such that said clasp will reversibly engage to said connector and apply sufficient tension to said strap to hold said outer and inner door means against said first and second door engaging means when said clasp and connector are engaged and release said doors when the clasp and connector are disengaged.

4,468,887

WINDOW LIFTING MECHANISM, PARTICULARLY FOR MOTOR VEHICLES

Wilhelm Koch, Ebelsbach, Fed. Rep. of Germany, assignor to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft, Fed. Rep. of Germany

Filed May 19, 1982, Ser. No. 379,906

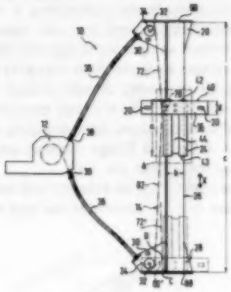
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122202

Int. Cl.[3] **E05F** *11/48*

U.S. Cl. 49—352 **22 Claims**

1. A window lifting mechanism, particularly for motor vehicles, with a lifting rail (18) which engages at a window pane (22), a slide member (24) which is connected with said lifting rail (18) and is slidably supported at a guide rail (26), and a drive (12) which acts on said lifting rail (18) and moves said lifting rail (18) along said guide rail (26), wherein said lifting rail (18) is slidable with respect to said slide member (24) essentially in the longitudinal direction (X) of said guide rail (26) by means of a linear guidance which connects said lifting rail (18) and said slide member (24), said linear guidance being of essentially rigid construction with respect to the tilting motions of said lifting rail (18) which lie in the plane of said window pane

and act relative to said slide member (24), characterized by at least one bearing part which is attached at said lifting rail (18)



and is supported to be slidable at said slide member (24) in the longitudinal direction (X) of said guide rail (26).

4,468,888

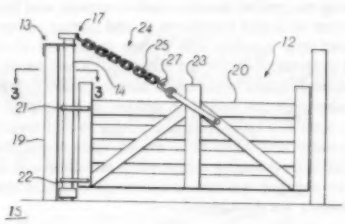
GATE ASSEMBLY

Frank E. Harris, deceased, late of Sheyenne, N. Dak., and by Beverly I. Lovejoy, administratix, 5040 Rimrock Rd., Billings, Mont. 59102, assignors to Beverly I. Lovejoy, Billings, Mont.; Kim M. Harris, Hermosa Beach, Calif.; Margarette C. Felchle and Ruth L. Nolan, both of Eugene, Oreg.

Continuation-in-part of Ser. No. 180,571, Aug. 25, 1980,. This application Jun. 10, 1982, Ser. No. 386,874

Int. Cl.[3] E05F *7/06*

U.S. Cl. 49—396 2 Claims



1. A gate assembly including a gate portion, a gate support portion and a gate connecting portion; said gate portion including a plurality of substantially horizontal board members, vertical end braces connecting and being affixed to the ends of said board members, a vertical brace connecting and being affixed to the center part of said board members, diagonal braces extending between the lower ends of said vertical end braces and the upper end of said vertical center brace; said gate support portion including a fixed upstanding support column with a generally circular cross section, said support column extending vertically upwardly, a rotatable anchor collar disposed adjacent the top of said support column, said collar surrounding said upstanding support column and being spaced therefrom, said collar being disposed about said upstanding support column in a generally horizontal plane, bearing means disposed between said support column and said collar, U-shaped hinges disposed around said upstanding support column and freely rotatable with respect thereto, the free ends of said hinges extending along and being affixed to opposite sides of said gate portion adjacent one end thereof; said gate connecting portion including bracket means affixed along the length of said gate portion adjacent the vertical center brace thereof, said bracket means including parallel strap members with one extending downwardly at an angle along each side of said gate portion and overlapping said center brace, the lower ends of said strap members being secured to each other through one of said diagonal braces of said gate portion and pivotally connected thereto, the upper ends of said strap members extending beyond said gate portion, a hook member disposed between said upper ends of said strap members and pivotally connected thereto, connecting means extending between and joining said rotatable anchor collar with said hook member, said connecting means including a chain section adjacent said hook member; whereby said gate portion is pivotable about said upstanding support column and the spacing between said anchor collar and said gate portion can be changed by varying the connection of said chain section with said hook member to increase or decrease the distance between the bottom of said gate portion and a base surface from which said upstanding support column extends.

4,468,889

DOUBLE GLAZING ARRANGEMENT

Brian J. Jolly, Towcester, England, assignor to Polycell Products Limited, Hertfordshire, England

Filed Nov. 18, 1981, Ser. No. 322,701

Claims priority, application United Kingdom, Nov. 24, 1980, 8037620

Int. Cl.[3] E05D *13/00*

U.S. Cl. 49—453 9 Claims

1. A double glazing apparatus comprising at least one sliding pane mounted for vertical movement between two opposed vertical channels each having a vertical guideway formed therein, the pane adapted for lateral movement towards and away from a base portion of each respective one of the channels for removal of the pane from between the channels, and a pair of catches on each side edge portion of the pane, each one of the catches protruding further into the respective channel than the pane for sliding engagement with the respective vertical guideway, each one of the catches adapted for withdrawal from said channel so as to allow the pane to be moved laterally and then removed, one catch of each of the pair of catches adapted for holding the pane in a plurality of raised positions by protruding still further into the respective channel past the associated guideway, and each channel having a series of internal stops provided therein at different heights for releasable engagement with a free end portion of the respective one catch of each of the pair of catches.

4,468,890

APPARATUS FOR THE MANUFACTURE OF LENS-LIKE ARTICLES AND THE LIKE

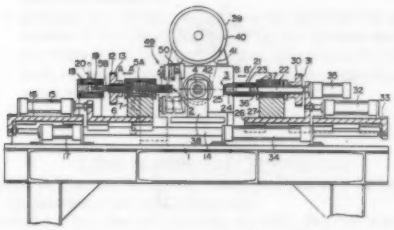
Yoshiaki Nagaura, No. 391-2, Tonoharu, Oaza, Chikushino-shi, Fukuoka-ken, Japan

Division of Ser. No. 170,45, ,. This application May 18, 1982, Ser. No. 379,320

Claims priority, application Japan, Aug. 2, 1979, 54-99650; Aug. 4, 1979, 54-99627; Aug. 16, 1979, 54-105340; Mar. 3, 1980, 55-27599; Mar. 4, 1980, 55-27597; Mar. 11, 1980, 55-32052; May 1, 1980, 55-59255

Int. Cl.³ B24B *13/02*

U.S. Cl. 51—3 **6 Claims**



1. An apparatus for the manufacture of a lens-like article or the like from a workpiece, comprising:

a pair of opposing workpiece holders, each provided on a chassis in a manner to be movable back and forth along a standard center axis and each rotatable about said center axis;

each of said holders being capable of holding a workpiece independently of the other holder with at least a first one of said workpiece holders being of a suction type for holding a workpiece by suction; and

machining means provided on the chassis for machining surfaces of a workpiece held independently in each of said workpiece holders in succession, whereby one surface of a workpiece can be machined while the workpiece is held in a second one of said holders, said holders can be moved together to transfer the workpiece from said second one of said holders to said first one of said holders and the workpiece can be centered on said center axis and held in said first of said workpiece holders by suction.

4,468,891

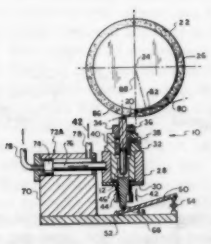
MACHINE FOR POINT GRINDING DRILLS

Karl H. Giebmanns, Westport, Conn., assignor to ITM International Tool Machines Inc., Westport, Conn.

Filed Jul. 29, 1981, Ser. No. 287,879

Int. Cl.³ B24B *3/26*

U.S. Cl. 51—95 WH **9 Claims**



1. In a machine for pointing the ends of drill,

a rotating grinding wheel having a grinding surface defining a body of revolution,

a drill support having means to support a drill with the drill axis perpendicular to the axis of rotation of said grinding wheel,

means cooperable with said support to cause said support and the drill supported thereby to move toward and away from grinding engagement with a selected point on the body of revolution forming the grinding surface and including means connected with said support to move the same and the drill supported thereby in a direction tangent to said selected point,

means on said support operable to rotate the drill about its longitudinal axis in response to the movement of said support toward engagement with said selected point,

and said grinding surface being bevelled at an angle coincident with the point angle to be ground thereby on the end of the drill.

4,468,892

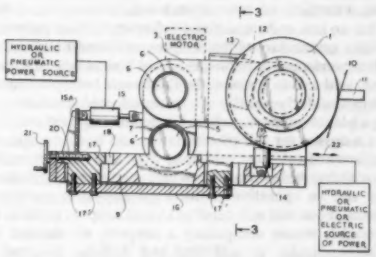
GRINDING MACHINE

Karl H. Giebmanns, Westport, Conn., assignor to ITM International Tool Machines, Inc., Westport, Conn.

Filed Jul. 17, 1981, Ser. No. 284,410

Int. Cl.³ B24B *7/00*

U.S. Cl. 51—99 **5 Claims**



1. In a grinding machine, an improved grinding wheel support arrangement, comprising in combination

a support frame;

a support member being pivotally mounted in said frame at one of its two free ends;

a support leg being pivotally connected at one of its two free ends to the support member at the other one of the support member's free ends;

a grinding wheel shaft freely rotatable mounted on said support leg at the other one of the two free ends;

a grinding wheel coaxially mounted on the grinding wheel shaft;

a first separate adjusting means operatively mounted on the support frame, said fist adjusting means being positively linearly and only normally movably mounted relative to the support frame and having a free end which is operatively connected to the support leg to adjust the position of the grinding wheel relative to said support frame by only linearly moving the first adjusting means in a direction which is normal relative to said support frame, said first adjusting means acting in the plane of the grinding wheel; whereby the position of the grinding wheel is only adjustable in a plane parallel to the movement of the first separate adjusting means; and

a second separate connected adjusting means connected to said support leg to adjust the position of said grinding wheel relative to said support frame jointly with said first adjusting means, said second adjusting means including a sled which is linearly slidably movably supported on said first adjusting means said second separate adjusting means being pivotally mounted on said leg and the first adjusting

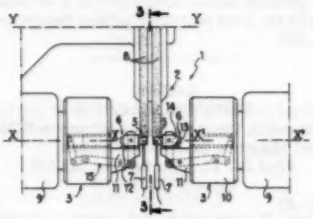
means including a piston-cylinder unit mounted on said frame.

4,468,893

MACHINE FOR MACHINING AND IN PARTICULAR GRINDING CYLINDRICAL SURFACES

Gérard Deschatrettes, Guecellard, and René Tirel, Pont de Gennes, both of France, assignors to Glaenzer Spicer, Poissy, France

Filed Sep. 9, 1981, Ser. No. 300,981
Claims priority, application France, Sep. 29, 1980, 80 20805
Int. Cl.³ B24B *5/04*
U.S. Cl. 51—105 R **5 Claims**



1. A machine for machining, such as grinding, a plurality of cylindrical surfaces on a workpiece which comprises a body which has an axis and a machined reference surface perpendicular to said axis and to which body unmachined blanks of said cylindrical surfaces are connected, said blanks extending radially from said axis in a plane parallel to said reference surface and being angularly equally spaced apart, said machine comprising a planar support surface for supporting said reference surface, a device for selectively fixing said body on said support surface and releasing said body from said support surface, and a withdrawable means movable between a withdrawn position and an operative position for angularly positioning said blanks about said axis relative to said support surface, said withdrawable means comprising a support, an element in a plane perpendicular to said axis and defining inverted V-shaped recesses in a number and in angular positions corresponding to the number and angular positions of said blanks, the recesses being divergent relative to said support surface, an indexing device for rotating said element about said axis in angular increments corresponding to the angular spacing between said V-shaped recesses for bringing each of said blanks in turn to a position for machining said cylindrical surface on each blank, and elastically yieldable means for allowing said element a slight angular deviation from a plane perpendicular to said axis in order to accommodate any slight lack of parallelism between said element and said support surface, said elastically yieldable means comprising an elastically yieldable washer connected at angularly spaced apart first points to said support and connnected at second points interposed between said first points to said elements.

4,468,894

ELECTRICALLY DRIVEN KNIFE WHETTING MACHINE

Kee S. Hong, #16-84, Hoegi-dong, Tongdaemun-ku, Seoul, Rep. of Korea

Filed Jan. 7, 1982, Ser. No. 337,726
Claims priority, application Rep. of Korea, Jan. 13, 1981, 81-179; Aug. 11, 1981, 81-5607
Int. Cl.³ B24B *3/54*
U.S. Cl. 51—109 BS **9 Claims**

1. An electrically driven knife whetting machine comprising:

an electric motor having a rotating shaft;

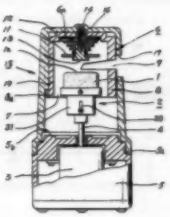
said electric motor being contained in a motor housing with said shaft extending out of said motor housing;

a grindstone rotating assembly securely mounted on said shaft, said assembly including a grindstone mounted on a grindstone holder, said grindstone having a top grinding surface;

a cylindrical upper cover securely mounted on said motor housing;

a knife blade regulating and guiding means being cylindrically shaped like an upside-down cup for receiving said grindstone therein, said cup having a knife blade guiding opening of a given angle and size provided in a cylindrical wall thereof, said guiding opening being disposed above said grindstone;

first means for elastically moving said cup relative to said upper cover so that said guiding opening can be moved up and down with respect to said grindstone;



second means for preventing said cup from being laterally rotated with respect to said upper cover;

said cup being located above said grinding surface and being substantially covered by said upper cover;

a bushing being attached to an inside ceiling of said upper cover, said bushing extending through an opening in a ceiling of said cup; and

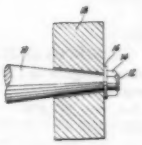
said first means for elastically moving said cup being located around said bushing between an end of said bushing and said ceiling of said cup to bias said cup away from said grinding surface.

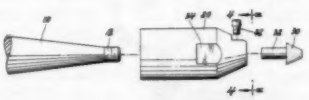
4,468,895

SURFACE GRINDER ATTACHMENT

Gary J. Signorelli, 18781 Volland, Roseville, Mich. 48066

Filed Mar. 28, 1983, Ser. No. 481,382
Int. Cl.³ B24B *23/00*
U.S. Cl. 51—168 **4 Claims**





1. The combination comprising:

a surface grinder having an elongated, tapered spindle having an extreme end threaded for receiving a threaded fastener;

grinding wheel means removably mounted on the spindle,

and fastener means mounted on the threaded end for preventing removal of the grinding wheel means;

a grinding attachment including an elongated body having a longitudinal bore having a first section of a first diameter adjacent one end of the body and opening thereto, a second section of a lesser diameter adjacent the opposite end of the body and opening thereto, and an intermediate section between said first and second sections;

the first section having a bore tapered to telescopically receive the tapered spindle, the intermediate section being internally threaded to threadably engage the threaded end of the spindle when mounted in a counterclockwise motion thereon at such times as the first grinding wheel is removed therefrom;

a grinding tool having a shank receivable into the second section of the longitudinal opening, and fastener means on the body for engaging the shank to prevent its rotation with respect to the body at such times as the spindle is being rotated.

4,468,896

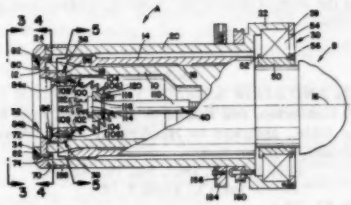
LENS PROCESSING APPARATUS

Frank D. Sorrells, Knoxville, Tenn., assignor to Cole National Corporation, Cleveland, Ohio

Division of Ser. No. 233,323, Feb. 11, 1981, Pat. No. 4,419,849. This application Dec. 5, 1983, Ser. No. 524,972

Int. Cl.³ B24B *41/06*

U.S. Cl. 51—217 L **19 Claims**



1. A lens blank chuck assembly adapted for cooperatively mounting on the tailstock of lens generating apparatus and wherein an elongated generally cylindrical collet extends coaxially outward from said tailstock with said chuck assembly facilitating desired positioning of a lens blank relative to said generating apparatus, said chuck assembly comrising:

a hollow generally cylindrical chuck body housing having spaced apart first inner and second outer ends with the chuck assembly longitudinal axis extending therebetween, the inside diameter of said chuck body being greater than the outside diameter of a collet on an associated lens generating apparatus;

mounting means at said chuck body housing first end adapted for mounting said chuck assembly to an associated lens generating apparatus coaxial with the tailstock thereof, said mounting means allowing selective rotation of said chuck assembly about said longitudinal axis;

receiving means disposed adjacent said chuck body housing second end adapted to mountingly receive a lens block having one face of a lens blank secured thereto at generally the lens blank frame center axis, said receiving means including means for positioning the lens block so that a predetermined desired optical center axis for the lens blank is positioned coaxial with said longitudinal axis to effect lens blank decentration; and,

a pair of spaced apart retaining members radially interposed between opposite sides of said receiving means and the collet of an associated lens generating apparatus, said retaining members being radialliy movable toward and away from each other in response to selective closing and opening of the collet for causing said receiving means to be moved between lens block clamping and non-clamping conditions.

4,468,897

UNIVERSAL PNEUMATIC GRINDING BAR

Richard C. Merrel, Lakewood, Calif., assignor to Joseph V. Munoz, El Toro and Anthony J. Zavala, Long Beach, both of, Calif., part interest to each

Filed Sep. 27, 1982, Ser. No. 424,384

Int. Cl.³ B24B *41/00*

U.S. Cl. 51—259 **11 Claims**

1. An improvement in a pneumatic drive for a tool comprising:

a turbine housing;

a pneumatic motor included within said turbine housing including a drive shaft extending from said pneumatic motor for engagement with said tool;

a rigid delivery tube connected on one end to said turbine housing for supporting said turbine housing in a predetermined orientation and position and for delivering pressurized air to said pneumatic motor; and

mounting means for positioning and orienting said rigid delivery tube, said mounting means being connected to an opposing end of said rigid delivery tube, whereby said tool may be pneumatically driven in an arbitrary position and orientation by appropriate selection of the shape and length of said delivery tube thereby allowing said pneumatically driven tool to be easily adapted for use with standardized production machinery to which said mounting means is coupled.

4,468,898

BUILDING SYSTEM

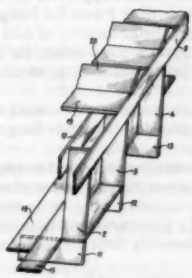
Nicolaas A. Geertsma, van Limburg Stirumweg 6, 6861 WL Oosterbeek, Netherlands

Filed Mar. 25, 1982, Ser. No. 361,984

Claims priority, application Netherlands, Mar. 31, 1981, 8101589

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—36 **9 Claims**



1. A support wall unit for use as a support element in building construction and to selectively define an internal storage area, said wall unit being defined by rigidly connected elongated planar structural members having opposed faces, opposed linear edges and opposed ends, each structural member being of substantially greater width than thickness, said struc-

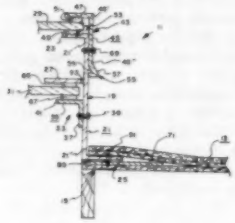
tural members comprising multiple first members vertically positioned and laterally aligned in parallel vertical planes to define a wall unit depth equal to the width of the first members between the linear edges thereof, said wall unit depth being such as to define a storage area, the opposed ends of said first members constituting upper and lower ends, said structural members comprising second members horizontally positioned and extending in vertical planes along the opposed linear edges of said first members perpendicular thereto, said second members having a vertical width between the opposed linear edges of the second members less than the vertical length between the upper and lower ends of first members, said second members being oriented in at least one opposed pair with the corresponding faces thereof intimately engaged against the opposed linear edges of said first members at the upper ends of the first members, said structural members further comprising third members positioned between and in edge abutting engagement with adjoining ones of said first members within the wall unit depth.

4,468,899

SKYLIGHT

Grady P. Miller, 2608 Holly Springs Dr., Germantown, Tenn. 38138

Filed Dec. 3, 1982, Ser. No. 446,448
Int. Cl.³ E04D *1/36*; E04B *7/18*
U.S. Cl. 52—58 **18 Claims**



1. A skylight comprising:

(a) a frame means including a frame-body member having an upper edge and a lower edge, including a lower flange member extending outwardly from said lower edge of said frame-body member, including an upper flange member extending inwardly from said upper edge of said frame-body member, and including an intermediate flange member extending inwardly from said frame-body member at a location intermediate said upper and lower edges thereof;

(b) a first transparent plate means for being supported relative to said upper flange member of said frame means;

(c) a second transparent plate means for being supported relative to said intermediate flange member of said frame means;

(d) anchor means for securing said second transparent plate means relative to said intermediate flange member of said frame means;

(e) cap means for securing said first transparent plate means relative to said upper flange member of said frame means, said cap means including a cap-body member having an upper edge and a lower edge and including a flange member extending inwardly from said upper edge of said cap-body member;

(f) seal means for sealing said first transparent plate means relative to said cap means and said frame means, said seal means including a first seal member for being positioned generally between said first transparent plate means and said upper flange member of said frame means and including a second seal member for being positioned generally between said first transparent plate means and said flange member of said cap means; and

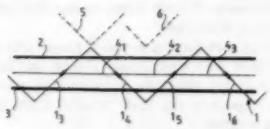
(g) lock means for locking said frame means and said cap means together.

4,468,900

FALSE CEILING ELEMENT

Guy G. Chénel, 80, avenue Victor Hugo, Vanves (Hauts de Seine), France

Filed Nov. 6, 1981, Ser. No. 318,708
Claims priority, application France, Jun. 17, 1981, 81 11968
Int. Cl.³ E04F *13/00*; E04B *5/52*; A47H *5/032*
U.S. Cl. 52—64 **3 Claims**



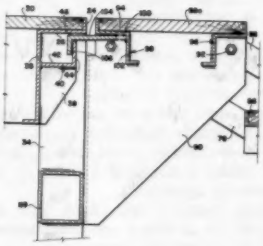
1. A false ceiling element comprising a strip of thin flexible material folded generally in a zig-zag manner transversely to its length and hung from at least one support for longitudinal sliding thereon, said element being characterized in that the adjacent surfaces of the strip are connected to one another by at least one flexible member extending generally parallel to said support, said flexible member comprising a string passing through the surfaces of the folds of the strip and said string is fixed at the level of each of the resulting intersections by a spot of adhesive.

4,468,901

PORCH AND STAIR ASSEMBLY FOR MOBILE HOMES

Joe W. Henderson, and Ronald J. Henderson, both of Claremore, Okla., assignors to Hendercraft Metal Works, Inc., Claremore, Okla.

Filed Sep. 30, 1982, Ser. No. 428,642
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—79.6 **5 Claims**



1. A porch and stairway assembly particularly for mobile homes and comprising a porch section, a handrail section, a stairway section, and complementary bracket means cooperating between the sections for ease of assembly and disassembly of the porch and stairway assembly; the porch section including an open frame means supporting a porch floor means, and adjustable support leg means secured to the frame means for positioning of the porch floor means in a substantially level horizontal position regardless of the contour upon which the porch section is installed; and wherein the complementary bracket means comprises first bracket means of substantially L-shaped cross-sectional configuration secured to the open frame means and providing a hiatus therebetween, second bracket means of substantially L-shaped cross-sectional configuration provided on the handrail section for an interlocking and removable engagement with the first bracket means for

ease of installation of the handrail section with the porch section without the use of additional securing means, and third bracket means provided on the stairway section for an interlocking and removable engagement with the first bracket means for ease of installation of the stairway section with the porch section without the use of additional securing means.

4,468,902

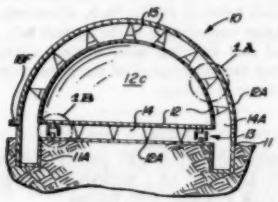
MULTI-WALLED STRUCTURES FOR CONTROLLED ENVIRONMENTAL USE

Pryce Wilson, 2202 N. 38th St., Phoenix, Ariz. 85008

Division of Ser. No. 869,832, Jan. 16, 1978, Pat. No. 4,364,208. This application Sep. 10, 1982, Ser. No. 416,648

Int. Cl.³ E04B 7/18

U.S. Cl. 52—80 **6 Claims**



1. A multi-walled object comprising:

first and second juxapositioned wall members,

the first wall member positioned within the second wall member and enclosing a first space,

means for enclosing a second space between said wall members,

strut means mounted within said second space to extend between said wall members at spaced positions for supporting the wall members,

said strut means comprising V-shaped configurations formed to control the flow of energy between the members and having its base engaging one wall member and its apex engaging the other wall member,

valve means associated with one of said wall members and operable for periodically controlling the molecular count in said second between said wall members, and

portal means extending through said wall members for ingress and egress into said first space,

the first wall member comprising the floor, walls and ceiling for said first space for multi-purpose uses,

said second space is formed into third and fourth isolatable spaces,

the third space being formed between portions of said wall members forming the walls and ceiling of the object and the fourth space being formed between the portions of said wall members forming the floor of said object,

said valve means being positioned between said third and fourth spaces to selectively isolate said third and fourth spaces, one from the other, and interconnecting them for controlling the molecular count in the third space.

4,468,903

BUILDING PANEL

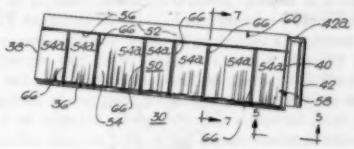
James W. Eaton, Sleepy Hollow, and Erland D. Narhi, Streamwood, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed May 3, 1982, Ser. No. 373,861

Int. Cl.³ E04D 1/00

U.S. Cl. 52—105 **16 Claims**

1. A unitary building panel formed of a single piece of fibrous wood material pressed to a substantially uniform thickness overall and having generally parallel opposite inner and outer faces outlined by opposite ends and by upper and lower edges, said opposite ends of said panel adapted to closely face the end of an adjacent panel in the same course, said outer face having a lower portion of substantially larger surface area than an upper portion of a relatively smaller surface which is generally flat and adapted to underlie a lower portion of one or more panels in a next higher course laid in overlapping relation to form a narrow heap lap therewith, said larger lower portion of said outer face adapted for exposure to weather, substantially coplanar with said smaller flat upper portion and having an irregular surface deeply embossed to resemble a plurality of individual shingle-like elements positioned in side by side rela-



tion in a common course, and at least one groove formed in said outer face of said panel positioned between adjacent pairs of individual shingle-like elements and extending from said smaller upper portion of said outer face to a lower end open at said lower edge of said panel, said groove tapering from a minimum depth adjacent said smaller upper portion of said outer face to a greater depth adjacent said lower edge of said panel whereby said single panel resembles a plurality of tapered thick butt shingles laid in a common course with the lower edges of said elements along a common edge plane.

4,468,904

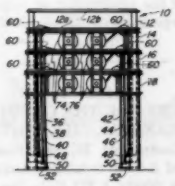
MULTI-STAGE EXTENDABLE TOWER

James J. O'Malley, 8011 NW. 35th Ct., #3, Coral Springs, Fla. 33065

Filed Apr. 14, 1983, Ser. No. 484,856

Int. Cl.³ B66C 23/06

U.S. Cl. 52—111 **12 Claims**



1. A multi-stage extendable tower comprising:

a plurality of frame members each adapted to telescope vertically within adjacent said frame members from a minimum height to a maximum working height;

the lowest frame member of said plurality of frame members when said tower is vertically extended being adapted to support said tower on a generally level surface;

the highest frame member of said plurality of frame member of said plurality of frame members when said tower is vertically extended being adapted to support a useful weight; and

a plurality of torsion spring means for vertically extending and telescoping said plurality of frame members to elevate said useful weight to a particular height up to and including said maximum working height;

each said torsion spring means connected between adjacent said frame members;

each said plurality of torsion spring means includes at least one elongated cylindrical helix spring connected at one

end to one said adjacent frame member, the other end of each said helix spring connected to a cable drum; and

a length of cable connected at one end to the other said adjacent frame member, the other end of said cable connected to said cable drum.

4,468,905

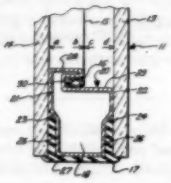
INSULATED GLASS SPACER

James T. Cribben, Mechanicsburg, Pa., assignor to Capitol Products Corporation, Mechanicsburg, Pa.

Filed May 24, 1982, Ser. No. 381,249

Int. Cl.³ E06B *3/24;* E04B *1/90*

U.S. Cl. 52—172 5 Claims



1. A combination glass spacer and plastic film holder for installation between two panes of glass in an insulated glass panel, comprising a unitary somewhat rectangularly shaped longitudinal member having two outermost sides which are substantially parallel to each other, each of said two outermost sides being bent inwardly a relatively short distance and each respectively forming a pair of spaced apart equal sides which are substantially parallel to each other but spaced nearer to each other than the two outermost sides are spaced to each other, said two equal sides being joined together by a flat side to thereby form a channel or U-shaped member, one of said outermost sides being taller than the other outermost side and said outermost sides being joined together by a single relatively small horizontal channel positioned therebetween and integrally formed therewith, said horizontal channel being adapted to receive a thin plastic sheet or film and so formed that it may receive one edge of the plastic film at approximately a right angle to the normal position of the plastic film when installed in said spacer.

4,468,906

BLOCKS OR BRICKS FOR THE CONSTRUCTION OF A TWO-SHELL TILE STOVE

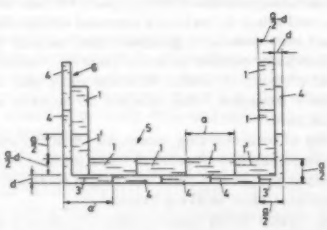
Horst Miedaner, Guetratweg 10, and Herbert Spirk, Kühbergstr. 31, both of A-5020 Salzburg, Austria

PCT No. PCT/AT80/00038, § 371 Date Sep. 17, 1981, § 102(e) Date Sep. 17, 1981, PCT Pub. No. WO81/02193, PCT Pub. Date Aug. 6, 1981

PCT Filed Dec. 30, 1980, Ser. No. 306,613

Int. Cl.³ E04B *1/00;* F23M *5/02*

U.S. Cl. 52—279 4 Claims



1. A brick and the assembly for producing a double-shell tile furnace having an internal shell of refractory parallelepiped-shaped building bricks and an external shell comprising tiles of a thickness d, a length a and a height b, as well as corner tiles of the same thickness and height, one of their legs having an external length selectively of a/2 and 3a/2, one row of tiles, each, being staggered by the amount a/2, the length of building brick being selected from a brick sequence with the following relations of length: the length of the first building brick corresponds to the amount (a/2)—d, the difference in length between the two first building bricks corresponds to the amount d, and the difference in length between two building bricks, each, selectively of odd and even place value corresponds to the amount a/2, the height of said building brick being selected from a brick sequence with the following relations of height: the height of the first building brick corresponds to the amount (b/2)—d, the difference in height between the two first building bricks corresponds to the amount d, and the difference in height between two building bricks, each, selectively of odd and even place value corresponds to the amount b/2, and the wall thickness of said building brick corresponding to an amount completing the thickness d of the corner tile to the external length of one of its legs.

4,468,907

DEVICE FOR PROTECTING STEEL REINFORCEMENTS FOR CONCRETE AS WELL AS A METHOD AND DEVICE FOR PRODUCING THEM

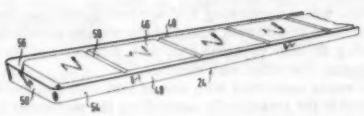
Lothar Tiletschke, and Hellmuth Feldmann, both of Bielefeld, Fed. Rep. of Germany, assignors to Signma Bauelemente GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jan. 20, 1983, Ser. No. 459,495

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 3201918

Int. Cl.³ E04B *1/41;* E04C *1/00*

U.S. Cl. 52—333 13 Claims



1. Device for protecting steel reinforcements for joint regions of concrete structures in the form of an elongated, flat, bottom box that is open at the top and has slots in the bottom to hold angle-shaped anchorage regions of the steel reinforcements inserted into the bottom box, and a box-shaped cover that closes the device, characterized by the fact that the side walls (48, 50) of the cover (24) are in the form of a double layer and form an interspace (56) which is open toward the top surface (46) of the cover.

4,468,908

PROCESS AND APPARATUS FOR PRODUCING A FLOOR-, WALL- OR CEILING SURFACE FORMED OF INDIVIDUAL ASSEMBLY PLATES AND PROVIDED WITH A COVERING

Wolfgang Radtke, Overath; Friedrich H. Schmidt; Fritz Reuter, both of Cologne; Walter Moog, Aachen-Richterich, and György Borbely, Düsseldorf, all of Fed. Rep. of Germany, assignors to Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,632

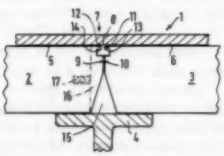
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 3012470

Int. Cl.³ E04B *3/52*

U.S. Cl. 52—483 9 Claims

1. A floor, wall or ceiling construction comprising first and second individual plates disposed adjacent each other and each having top and bottom opposite surfaces and a relatively long

peripheral side surface therebetween, each peripheral side surface including a first surface portion immediately adjacent each top surface, said first surface portions being disposed in relatively close spaced side-by-side relationship to collectively define therebetween a relatively narrow guide groove of a predetermined width for receiving therein a cutting tool, said narrow guide groove being of a length corresponding to the length of said peripheral side surfaces, each first surface portion merging with a second surface portion, said second surface portions being disposed in comparatively further laterally spaced side-by-side relationship than said first surface portions



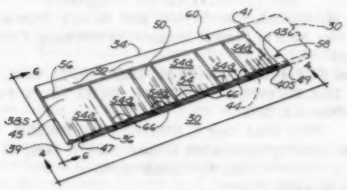
to define therebetween a relatively laterally wider channel than the width of said narrow guide groove, covering means for covering said top surface of each plate in spanning relationship to said narrow guide groove, an adhesive between said top surface and said covering means, abutment means positioned between said laterally wider channel and said bottom surface for maintaining said first surface portions in said spaced side-by-side relationship whereby, upon inserting a cutting element through said covering means and into and along said narrow guide groove, adhesive between said covering means and said top surface can freely pass through said narrow guide groove and collect within said relatively laterally wider channel.

4,468,909

BUILDING PANEL

James W. Eaton, Sleepy Hollow, Ill., assignor to Masonite Corporation, Chicago, Ill.

Filed May 3, 1982, Ser. No. 374,190
Int. Cl.³ E04D *1/00*
U.S. Cl. 52—541 **9 Claims**



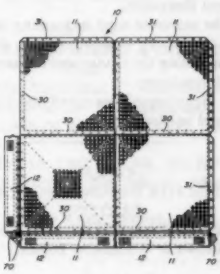
1. A building panel formed of a single piece of fibrous wood material pressed to a substantially uniform thickness overall between generally parallel and opposite, inner and outer faces outlined by opposite ends and by upper and lower edges, said opposite ends of said panel adapted to closely face the end of an adjacent panel in the same course, said outer face having a relatively large lower segment with a surface adapted for exposure and an area substantially larger than a long, narrow upper edge segment having a relatively smaller flat surface area adapted to underlie a lower inner face portion of one or more panels in a next higher course laid in overlapping relation therewith, said lower segment having an embossed irregular surface area formed to resemble a plurality of individual shingle-like elements laid side by side in a common course and separated by tapered grooves, said grooves tapering from a minimum depth adjacent an upper edge of said lower segment toward a maximum depth adjacent a lower edge of said panel for providing the appearance of a course of tapered, thick butt shakes or shingles, one of said ends of said panel including an overlap end segment adapted to overlie an underlying end segment at the other end of an adajcent panel laid up end to end in the same course to form a ship lap end joint between said panels, said overlap end segment at said one end containing a marginal end portion of said outer face with an underside therebelow formed to taper in a direction generally similar to the taper of said grooves from a minimum thickness adjacent said upper edge toward a maximum thickness adjacent said lower edge, said panel including an underlying end segment at the other end containing a marginal end portion of said inner face with an outer side adapted to underlie said tapered underside of an adjacent panel and formed to taper in a direction generally similar to the taper of said grooves from a maximum thickness adjacent said upper edge toward a minimum thickness adjacent said lower edge, whereby a plurality of said panels laid end to end in a common course with the overlap end segment of one panel overlapping an underlying end segment of an adjacent panel providing a tapered joint groove between the adjacent ends of said panels similar in appearance to said tapered grooves between adjacent shingle-like elements within each of said panels.

4,468,910

MAT MODULE WITH RAMP STRIP

Richard A. Morrison, 3 Morgan Rd., Baie d'Urfé, Quebec, Canada H9X 3A3

Filed Mar. 23, 1983, Ser. No. 478,142
Int. Cl.³ E04C *1/10*; B32B *3/10*
U.S. Cl. 52—591 **6 Claims**



1. A floor mat assembly formed from two different components, mat modules and ramp strips, and molded from resilient plastic and having in combination at least one mat module which is coupled to at least one ramp strip

the mat module comprising a rectangular shape with two adjoining edges, each of the edges having an upper coupling edge flap with a row of downward directed projections, and two other adjoining edges, each of the other edges having a lower coupling edge flap with a row of vertical holes to couple with a row of projections on an upper coupling edge flap of a ramp strip or an adjoining mat module,

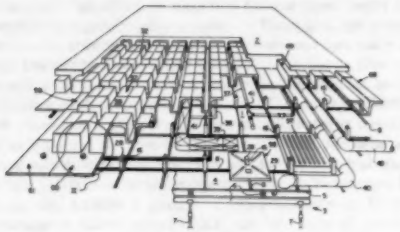
the ramp strip comprising a tapered face with an upper coupling edge flap adjacent the tapered face, and a lower coupling edge flap joined by a severable link to the upper coupling edge flap, the lower coupling edge flap of the ramp strip to couple with an upper coupling edge flap of a mat module, and when the link is severed, the upper coupling edge flap of the ramp strip to couple with a lower coupling edge flap of a mat module.

4,468,911

SYSTEM FOR FORMING STRUCTURAL CONCRETE

Andrew Daga, 122 Larchwood Ct., Collegeville, Pa. 19426

Filed Feb. 12, 1982, Ser. No. 348,192
Int. Cl.[3] E04C *1/24*
U.S. Cl. 52—743 20 Claims



1. A method for forming concrete structural elements comprising the steps of:

(a) erecting falsework means for supporting the structural element in position during formation; and thereafter,

(b) positioning a plurality of runners over the falsework means to form an intersecting array; and

(c) engaging intersections of runners forming the array with a plurality of supports which extend from the array;

(d) positioning a plurality of coffer plate means over the plurality of supports to define a concrete receiving cavity; and

(e) securing the plurality of coffer plate means to the plurality of supports using anchor means including means for interacting with concrete used in forming the structural element; and thereafter,

(f) pouring the concrete used in forming the structural element into the cavity defined by the plurality of coffer plate means, filling the cavity and surrounding the anchor means with concrete;

whereby, after the concrete has cured, the concrete structural element is formed in place.

4,468,912

APPARATUS FOR DEPOSITING COUPONS ON CARTONS

Robert T. Lewis, and Everett N. Finn, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 16, 1981, Ser. No. 322,058
Int. Cl.[3] B65B *61/20*
U.S. Cl. 53—137 7 Claims

1. An apparatus for depositing coupons, and the like, onto a carton, comprising:

a supply source of a web of coupons;

a rotatably mounted coupon web advance drum adapted to engage the coupon web in overlaying relationship around at least a portion of its periphery;

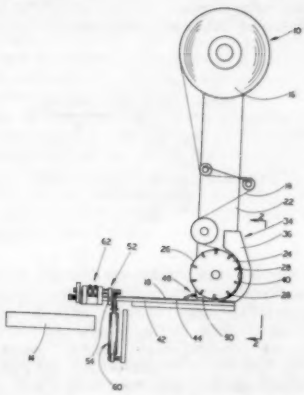
a coupon web slide plate extending from said advance drum;

coupon web stripper means for stripping said coupon web from said advance drum and guiding said coupon web onto said coupon web slide plate;

coupon web cutting means located near the end of said slide plate opposite said advance drum for cutting coupons from said coupon web;

coupon applying means located near said cutting means for receiving coupons from said cutting means and depositing the coupons adjacent the surface of a stationary carton disposed beneath said coupon applying means, said coupon applying means comprises means defining a coupon receiving slot for receiving coupons from said cutting means, said coupon receiving slot is open at both longitudinal ends in the direction of infeed of said coupons and at one side,

means for moving said coupon applying means between a first position for receiving a coupon from said cutting means and a second position for depositing the received coupon onto the stationary carton, said second position being spaced above said carton; and



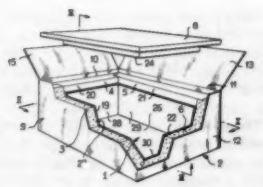
carton moving means for contemporaneously moving the carton and coupon away from said coupon applying means by moving the carton from beneath said coupon applying means and by moving the coupon from said coupon receiving slot through the open side of said coupon receiving slot onto the carton as the carton and coupon are moved by said moving means and having means for engaging said coupon and carton for moving the coupon out of said applying means in its second position.

4,468,913

METHOD OF CONDITIONING AND A BOX FOR THE IMPLEMENTATION THEREOF

Claude R. Guillon, Courbevoie, and Annick Schwarz, Feucherolles, both of France, assignors to Sofrigam, Courbevoie, France

PCT No. PCT/FR81/00061, § 371 Date Dec. 23, 1981, § 102(e) Date Dec. 23, 1981, PCT Pub. No. WO81/03162, PCT Pub. Date Nov. 12, 1981
PCT Filed May 5, 1981, Ser. No. 336,366
Claims priority, application France, May 7, 1980, 80 10197
Int. Cl.[3] B65B *63/08*
U.S. Cl. 53—440 3 Claims



1. A method of conditioning products which must be stored under determined temperature conditions, generally different from the conditions of the environment, utilizing a thermally insulated conditioning enclosure openable in any of a plurality of zones and initially opened in a determined zone comprising the steps of:

positioning removable reserve elements within the enclosures so as to integrally cover the inside periphery of the

enclosure and delimit a volume open at the determined zone;

positioning the products within the delimited volume;

removing one or more of the reserve elements;

replacing removed reserve elements with accumulating elements brought to a required predetermined temperature and having shapes and dimensions similar to the removed reserve elements whereby said volume remains delimited by the accumulating elements and remaining reserve elements;

positioning within the enclosure at the level of the determined zone accumulating elements brought to the predetermined temperature and having shapes and dimensions so as to contact accumulating elements delimiting the volume;

closing the enclosure at the determined zone;

opening the enclosure at a different zone opposite the reserve elements remaining in the enclosure;

removing the reserve elements remaining in the enclosure;

replacing the removed reserve elements with accumulating elements brought to said predetermined temperature and having sizes and shapes whereby the accumulating elements within the enclosure are in mutual contact and form an integral barrier surrounding the products; and

closing the enclosure at said different zone.

4,468,914

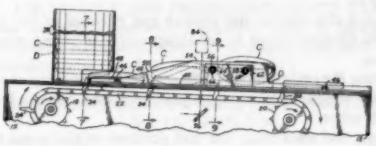
APPARATUS FOR FILLING PETRI DISHES

Arlin N. Pestes, Gresham, Oreg., assignor to Biomed Design, Inc., Vancouver, Wash.

Filed Dec. 15, 1980, Ser. No. 216,072

Int. Cl.³ B65B *57/06, 43/40*

U.S. Cl. 53—505 **7 Claims**



1. Apparatus for filling Petri and like dishes with a fluid material, comprising:

(a) conveyor means for moving a succession of dishes continuously in a downstream direction,

(b) a pair of feed nozzles spaced apart in the direction of conveyor movement and arranged for registry with dishes as the latter are moved by the conveyor means,

(c) conduit means communicating the nozzles with a supply of fluid material to be fed, and

(d) feed control means in the conduit means operable to effect feeding of fluid material to each dish alternately first through the upstream nozzle as it registers with the continuously moving dish and second through the downstream nozzle as it registers with the continuously moving dish.

4,468,915

SATELLITE PACKAGING SYSTEM

John C. Parry, 6729 Brookmont Dr., Baltimore, Md. 21207

Filed Nov. 30, 1981, Ser. No. 326,146

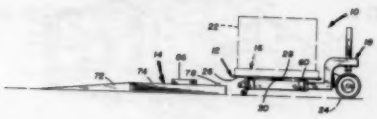
Int. Cl.³ B65B *11/04*

U.S. Cl. 53—587 **20 Claims**

1. A satellite packaging system, comprising:

at least one rotating power means, said rotating power means being located in a work area associated with packaging, said rotating power means serving as a base satellite position;

a plurality of material collecting means, each material collecting means of said plurality of material collecting means having a transport means, and a turn-table means for supporting a load carrying structure placed upon, supported by, and carried on each said turn-table means, each said turn-table means being placed upon, supported by, and carried on its respective transport means, each said turn-table means having a revolvable plate structure revolvable manually while said turn-table means is being supported by its respective transport means, said load carrying structure serving to carry a predetermined load of a quantity of materials to be packaged when assembled upon said load carrying structure and being supported by said turn-table means on said transport means, said revolvable plate structure having an undersurface for positioning and resting upon said rotating power means, said rotating power means providing motive power to turn said revolvable plate structure, said plurality of material collecting means being located in said work area, each material collecting means of said plurality of material collecting means serving as a floating satellite position that receives said material and sequentially moves the revolvable plate onto said power means;



wrapping means at said power means having a quantity of wrapping material for wrapping said wrapping material around each said predetermined load of said quantity of materials to be packaged to secure said predetermined load of said quantity of materials to be packaged to its respective load carrying structure, while said motive power turns said revolvable plate structure on said turn-table supported by said transport means.

4,468,916

MOWING DEVICE COMPRISING A DIVIDED CUTTER BAR

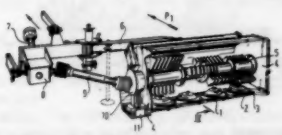
Hermanus H. Vissers; Hendrikus C. Van Staveren, both of Nieuw-Vennep, and Marinus H. Weststrate, Lisse, all of Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed Mar. 10, 1982, Ser. No. 356,790

Claims priority, application Netherlands, Mar. 13, 1981, 8101239

Int. Cl.³ A01D *35/264*

U.S. Cl. 56—13.6 **13 Claims**



1. A mowing device essentially comprising an elongate, closed and rigid casing being movable along the ground and extending transversely of the direction of movement of the mowing device, said casing comprising an end-to-end series of box-shaped parts having head faces disposed in abutting relation and means fixedly clamping said head faces in abutting relation so as to provide said elongate, closed and rigid casing in substantially inflexible form, said casing having a top wall, a plurality of vertical shafts rotatably supported by said casing and projecting through said top wall, driving means within

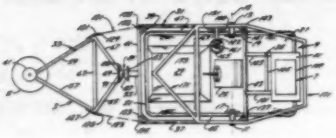
said casing causing said shafts to rotate and a cutting member fixed to each shaft in overlying relation to said casing.

4,468,917

BUSH CLEANING APPARATUS

Per-Gustaf Mellgren, Beaconsfield, Canada, assignor to Forest Engineering Research Institute of Canada, Pointe Claire, Canada

Filed Sep. 17, 1982, Ser. No. 419,162
Int. Cl.³ A01D *35/26*
U.S. Cl. 56—15.2 11 Claims



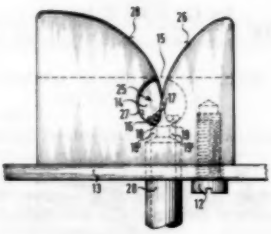
1. A bush cleaning apparatus having a frame with a front section, a central section and a rear section; the front frame section carrying a circular saw; the rear frame section carrying self-contained power means for operating the saw; first pivot means on the central frame section for use in pivotally mounting the apparatus onto a bush vehicle so that the frame can tilt relative to the vehicle about a generally horizontal axis to move the circular saw up or down; second pivot means connecting the front frame section to the central frame section for allowing the circular saw to swing about a generally upright axis; and first operator means on the frame for moving the front frame section about the second pivot means to swing the circular saw from side to side.

4,468,918

COMPRESSED GAS SPLICING HEAD

Joachim Rohner; Heinz Zumfeld, and Reinhard Mauries, all of Mönchengladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Apr. 25, 1983, Ser. No. 488,104
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215423
Int. Cl.³ B65H *69/06;* D01H *15/00;* D02J *1/08*
U.S. Cl. 57—22 2 Claims



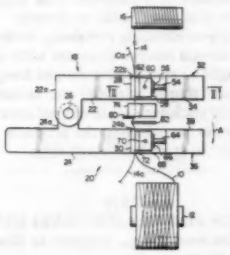
1. Compressed gas splicing head assembly in an automatic splicing device for producing a knot-free thread connection by splicing, comprising a compressed gas splicing head having a splicing channel with two ends formed therein defining a plane of symmetry in longitudinal direction of said splicing channel, said splicing head having outlets for said splicing channel formed therein, and said splicing head having at least two compressed gas injection openings formed therein discharging in said splicing channel mutually opposite and offset to the left and right of said plane of symmetry for holding and mutually tangling, bunching, swirling and winding fibers of two threads to be interconnected, said injection openings including an injection opening disposed closest to a given portion of each respective outlet, and thread and air guides each disposed at a respective one of said ends of said splicing channel, each of said guides obstructing a respective one of said given portions of said outlets, and said threads being disposed between at least two of said compressed air injection openings.

4,468,919

METHOD OF AND APPARATUS FOR JOINING END PORTIONS OF MULTIFILAMENT YARNS

Jiro Nakajo, and Shunzo Naito, both of Matsuyama, Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan

Filed Aug. 18, 1983, Ser. No. 524,315
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 19 Claims



1. A method of joining together respective leading and trailing end portions of two multi-filament yarns, comprising the steps of

disposing the leading and trailing end portions of the two multi-filament yarns in longitudinally contacting conditions,

clamping the end portions of the multi-filament yarns at two points which are located at a predetermined distance from each other,

drawing and slackening the end portions of the yarns between said two points, and

blowing air under pressure toward the end portions of the yarns so that a jet stream of air impinges at a predetermined angle upon the end portions of the yarns over a predetermined length of the end portions between said two points for causing the end portions of the yarns to disintegrate into filaments over said predetermined length and causing the filaments to entwine on one another.

4,468,920

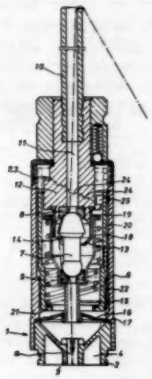
PNEUMATICALLY THREADABLE YARN BRAKE AND A TWO-FOR-ONE TWISTING SPINDLE EQUIPPED THEREWITH

Rainer Lorenz, Nettetal-Breyell, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,369
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104748326
Int. Cl.³ D01H *13/10, 7/86, 15/00;* B65H *59/22*
U.S. Cl. 57—279 9 Claims

1. A pneumatically threadable yarn brake comprising; an insert body, a substantially tubular brake housing having a lower and an upper brake surface ring spaced from each other in said body, a brake cartridge abuts against said lower and said upper brake surface ring, a restoring source means, the lower of said brake surface rings is axially displaceable downwardly against said restoring force for the purpose of releasing the yarn brake, said brake cartridge having an associated holding device which retains said brake cartridge in an intermediate position with spacing between said upper and said lower brake

surface rings when the lower brake surface ring is displaced downwardly, a cylindrical extension surrounding said rings and brake cartridge, an annular diaphragm having an outer periphery fixedly clampable to said insert body and to said



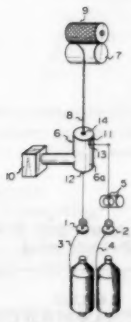
lower brake surface whereby said diaphragm defines the top of said body which is connectible to a source of vacuum for the purpose of displacing said diaphragm against said restoring force.

4,468,921

AIR NOZZLE FOR PRODUCING FANCY YARN

Kunio Shibata; Tomotsugu Kanamura, both of Nagoya, and Tunehiko Nakamura, Kani, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,826
Claims priority, application Japan, Jul. 1, 1982, 57-114691
Int. Cl.³ D02G *3/34*
U.S. Cl. 57—333 **3 Claims**



1. An air nozzle for producing a fancy yarn, comprising:

a hollow cylindrical body having a first inlet for a core yarn at one end thereof and at least a second inlet for a sheath yarn and at least a third inlet for operational fluid, the second and third inlets being tangentially bored in a circumferential wall of said body in the vicinity of the other end thereof, and being provided with a suction orifice for said fluid in a circumferential wall of said body in the vicinity of said first inlet;

a conical cap having a yarn draw-off passage through an axis thereof, coaxially inserted into said body through the other end of said body, an apex of said cap being disposed between said suction orifice and said second inlet, so that an annular space is formed between an inner surface of said body and an outer surface of said conical cap;

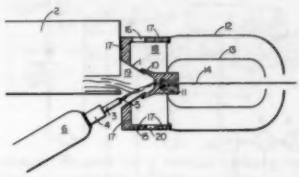
characterized in that a ring body having a central opening is coaxially mounted within said body between said apex of said conical cap and said orifice.

4,468,922

APPARATUS FOR SPINNING TEXTILE FIBERS

Paul E. McCrady, Columbus, and Robert B. Reif, Grove City, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Aug. 29, 1983, Ser. No. 527,005
Int. Cl.³ D01H *1/125*
U.S. Cl. 57—402 **11 Claims**



1. An electrostatic spinning apparatus for spinning textile fibers comprising:

a fiber feed means having an exit for discharging textile fibers therefrom;

a stationary conical member of electrically insulating material having an opening in the base for receiving fibers from the exit of said fiber feed means and an open-ended apex for passage of said fibers therethrough;

a rotating conical member of electrically insulating material spaced from said stationary conical member but having an open-ended base aligned therewith for receiving fibers passing through said stationary conical member;

a twister electrode at the apex of said rotating conical member for receiving fibers from said rotating conical member, for twisting said fibers into continuous yarn, but forming a trailing end of fibers into a yarn tail;

a twisting ground electrode proximate the fiber feed means exit and the base of said stationary conical member for reducing or eliminating reverse twist in said yarn tail extending from said twister electrode;

an electrical field between said ground electrode and said twister electrode produced by a voltage source so as to produce an electrical charge on fibers entering into said electrical field.

4,468,923

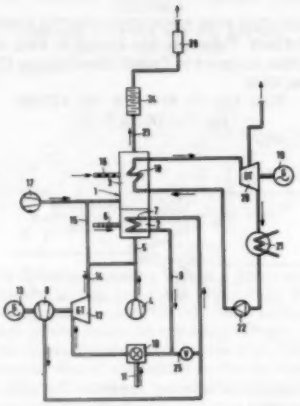
PROCESS AND PLANT FOR GENERATING ELECTRICAL ENERGY

Sigurd Jorzyk, Saarbrücken; Willy Meyer, Dudweiler, and Heinz Splicthoff, Friedrichstahal, all of Fed. Rep. of Germany, assignors to Saarbergwerke AG, Saarbrücken, Fed. Rep. of Germany

Continuation of Ser. No. 947,187, Sep. 29, 1978, abandoned. This application Feb. 25, 1982, Ser. No. 352,300
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743830
Int. Cl.³ F02C *3/26*
U.S. Cl. 60—39.02 **20 Claims**

1. Process for generating energy by fuel combustion, transfer of the combustion heat to operating medium and energy-yielding expansion of the operating medium, characterized in that a first portion of fuel is fed to and is combusted in a fluidized bed combuster and a second portion of fuel is fed directly to a second combuster, and the second portion of fuel is combusted in the second combuster, that hot waste gases of the fluidized bed combuster having unburned fuel particles en-

trained therein are supplied directly to the second combuster to support and stabilize combustion therein at reduced temperatures, a substantial portion of said unburned particles from the fluidized bed combuster being burned in the second combuster along with said second portion of fuel which is fed directly to



the second combuster, that part of the heat obtained in the fluidized bed combuster is transferred to compressed operating medium for a gas turbine and that residual heat from waste gas of the fluidized bed combuster, together with the combustion heat of the second combuster, is used for generating high pressure super-heated steam.

4,468,924

TURBINE ENGINE POWER OPTIMIZATION CONTROL SYSTEM

M. Samuel Moore, Northridge, Calif., assignor to Semco Instruments, Inc., North Hollywood, Calif.

Filed Sep. 24, 1982, Ser. No. 422,863
Int. Cl.³ F02C 9/28
U.S. Cl. 60—39.281 **17 Claims**

1. A turbine engine power management and control system for limiting the maximum speed of rotation of a turbine engine, wherein the maximum permissible speed is a function of temperature, and pressure among other factors, comprising:

means for sensing the air pressure in the vicinity of the jet engine;

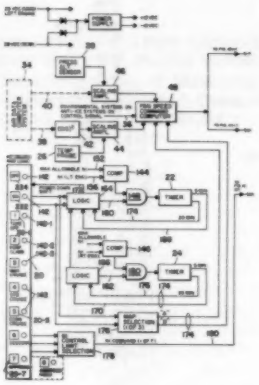
means for sensing the temperature in the vicinity of the jet engine;

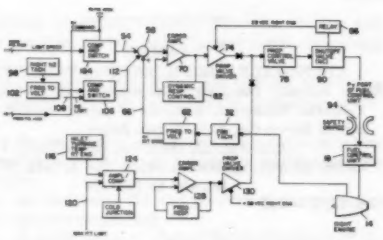
means for measuring the speed of rotation of at least one section of said engine;

first and second system means for determining at least two distinctly different respective "Maps" relating maximum jet engine rotational speed to pressure and temperature, each said system means including: (a) circuit means for determining a maximum allowable rotational speed which increases with increasing temperature at lower temperature ranges; (b) means for increasing the maximum allowable rotational speed with increasing altitude and reduced pressure; (c) means for reducing the maximum allowable speed with increasing temperature at higher temperature levels; and (d) means for limiting the allowable speed to a predetermined maximum absolute limit, regardless of temperature and pressure; to thereby determine a composite maximum allowable speed;

manually operable switching means for selecting one of said two distinctly different "Maps" of maximum allowable rotational speeds; and

means for comparing the actual turbine speed of rotation with the selected composite maximum allowable speed





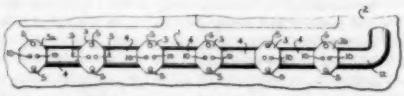
and for limiting the actual speed to the vicinity of said selected maximum allowable speed.

4,468,925

MODULAR ENGINE MANIFOLD CONSTRUCTION

Darrel Kersting, Black River Falls, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Filed Aug. 5, 1982, Ser. No. 405,515
Int. Cl.³ F01N 7/10
U.S. Cl. 60—322 **9 Claims**



1. In a modular exhaust manifold construction, a plurality of headers, each header having an inlet disposed to be connected

in communication with an exhaust gas port of an engine, each header also having a passage disposed at an angle to said inlet and extending completely through said header, a plurality of tubes interconnecting said headers, each tube having a uniform external diameter throughout its length, an end of each tube being slidably mounted within an end of each passage, whereby the ends of adjacent tubes are located in closely spaced proximity within the respective passage, said tubes being free to slide axially relative to said headers to accommodate heat expansion, and means interconnecting said headers and the respective tubes for preventing rotation of said tubes relative to the headers.

4,468,926

VEHICLE BRAKE BOOSTER

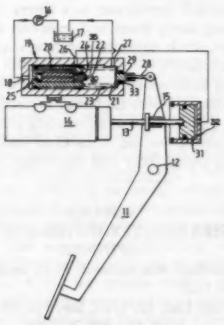
Harold Hodkinson, Coventry, England, assignor to Automotive Products plc, Leamington Spa, England

Filed Apr. 19, 1982, Ser. No. 369,496

Claims priority, application United Kingdom, May 1, 1981, 8113566

Int. Cl.³ B60T *13/20*

U.S. Cl. 60—550 **6 Claims**



1. A vehicle brake booster including:

a brake master cylinder operable by a brake pedal;

a boost piston for applying a boost force to said master cylinder;

a fluid pressure source;

and a power valve comprising:

a valve body having a bore therein;

an inlet port in the valve body for connection to said source;

a supply port in the valve body for connection to said boost piston

a drain port in the valve body for connection to a reservoir;

piston means slidable in said bore and urged by a resilient bias to one end of the bore, said piston means being responsive to fluid under pressure at said inlet port to slide to the other end of said bore into operable contact with the brake pedal;

a closure member slidable in the valve body and connected to the brake pedal and valve means incorporated in said piston means and co-operating with the closure member when said piston means is in an active position adjacent the other end of the bore to admit fluid under pressure from said inlet port to said supply port, the supply port being otherwise connected to the drain port and to apply to the brake pedal a proportion of the boost force developed by said boost piston.

4,468,927

HYDRAULIC BOOSTERS FOR VEHICLE BRAKING SYSTEMS

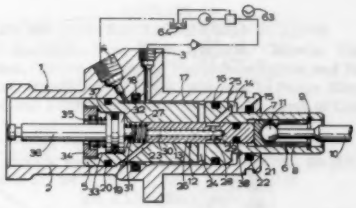
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Oct. 7, 1982, Ser. No. 433,238

Claims priority, application United Kingdom, Nov. 7, 1981, 8133643; Nov. 9, 1981, 8133772

Int. Cl.³ F15B *9/10, 15/17*

U.S. Cl. 60—554 **7 Claims**



1. An hydraulic booster for a vehicle braking system comprising a housing provided with a bore of stepped outline, an inlet for connection to a source of high pressure hydraulic fluid and an outlet for connection to a reservoir for fluid, a pedal-operated input member, a boost piston of stepped outline for actuating a master cylinder assembly working in said bore, and means defining a boost chamber in said bore, said boost piston being advanced in said bore in response to pressurisation of said boost chamber by fluid from said source, and valve means operable in response to a load applied to said input member to control pressurisation of said boost chamber, said valve means being operable to control communication between said inlet and said boost chamber and between said boost chamber and said outlet, wherein the diameters of said bore and said boost piston are arranged and sealed to provide an annular chamber surrounding said boost piston and connected to said inlet, such that a sealing diameter of said boost piston at a rearward end of said annular chamber is greater than a sealing diameter of said boost piston at a forward end of said annular chamber, with a radial clearance provided between said boost piston and said bore at said forward end of said annular chamber, and a forward seal between said bore and said boost piston at said forward end of said annular chamber is mounted in the wall of said bore such that said forward seal is radially deformable and is able to tolerate said radial clearance between said bore and said boost piston, said sealing diameters of said piston being chosen so that said boost piston can be assembled from the forward end of said bore, with said forward seal deforming radially to allow the passage of said greater rearward sealing diameter of said boost piston and returning to seal said lesser forward diameter.

4,468,928

ALTITUDE RESPONSIVE TURBOCHARGER CONTROL SYSTEM

Satoshi Suzuki, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,218

Claims priority, application Japan, Jun. 16, 1981, 56-92434

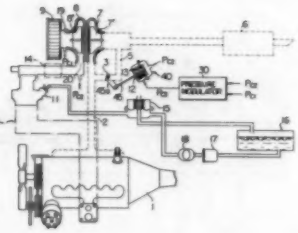
Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **8 Claims**

1. A control system for a turbocharger mounted on an internal combustion engine having intake and exhaust manifolds, said turbocharger including a turbine driven by engine exhaust gases from said exhaust manifold and a compressor mechanically connected to said turbine for producing compressed air to be introduced into said intake manifold, said control system including an exhaust gas bypass duct extending between exhaust gas ducts provided upstream and downstream of said

turbine, a waste gate mounted in said bypass duct to control the rate of exhaust gas flow through said bypass duct and controlling means mechanically connected to said waste gate to actuate said waste gate, characterized by:

generating means pneumatically connected to air ducts upstream and downstream of said compressor for producing a controlling pressure of a level between a first pressure proportional to the air pressure upstream of said compressor and a second pressure proportional to the air pressure downstream of said compressor;



said generating means including an altitude compensation means for adjusting said controlling pressure as a function of the atmospheric pressure to which said engine is subjected; and

said controlling means being operative to actuate said waste gate in response to the pressure difference between said controlling pressure produced by said generating means and said air pressure downstream of said compressor.

4,468,929

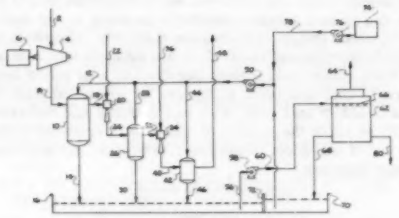
PURIFYING GEOTHERMAL STEAM

Robert T. Jernigan, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 531,799, Sep. 13, 1983, , which is a continuation-in-part of Ser. No. 325,472, Nov. 27, 1981, Pat. No. 4,414,817. This application Oct. 21, 1983, Ser. No. 544,179

Int. Cl.³ F03G *7/00*

U.S. Cl. 60—641.2 **10 Claims**



1. A process for using geothermal steam containing H_2S to generate electricity with subsequent purification of the residual steam comprising

(A) condensing said residual steam directly or indirectly with an aqueous solution in a condensing zone under a temperature sufficiently low to convert said steam into an aqueous solution containing dissolved hydrogen sulfide and its ions;

(B) converting said aqueous sulfide solution to an aqueous solution containing free sulfur and ferrous chelate by contacting said aqueous sulfide solution with an aqueous solution of ferric chelate containing a sufficient amount of ferric chelate to completely oxidize said sulfide ions to sulfur;

(C) converting said ferrous chelate solution with air in a cooling zone into an aqueous solution containing ferric chelate; and

(D) recycling said ferric chelate solution back to said condensing zone.

4,468,930

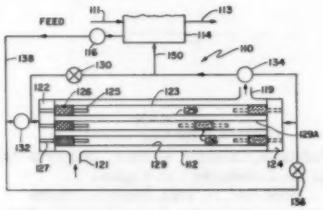
FREEZE CRYSTALLIZATION SUBASSEMBLY

Wallace E. Johnson, Topsfield, Mass., assignor to Concentration Specialists, Inc., Andover, Mass.

Filed Apr. 26, 1982, Ser. No. 371,658

Int. Cl.³ F28F *5/00, 19/00*

U.S. Cl. 62—71 **4 Claims**



1. A process for producing a slurry containing concentrated mother liquor and ice crystals from a water solution feedstream comprising the steps of:

(a) supplying said feedstream to a slurry reservoir;

(b) circulating slurry from said reservoir through a crystallizer where ice is deposited on heat exchange surfaces of the crystallizer;

(c) providing scrapers immersed in said slurry for removing the ice from said heat exchange surfaces;

(d) utilizing the pressure of circulating slurry to reciprocate said scrapers across the surfaces of said walls; and

(e) removing slurry from said reservoir.

4,468,931

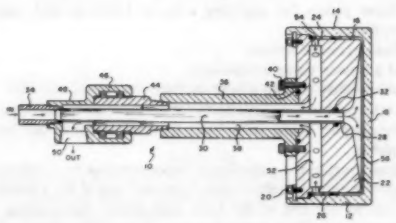
ULTRAHIGH VELOCITY WATER-COOLED COPPER SPINNER

Patrick J. Wooding, Morrestown, N.J., assignor to Wooding, Indian Mills, N.J.

Filed Oct. 13, 1981, Ser. No. 311,043

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—373 **2 Claims**



1. A fiberizing spinner for converting a stream of molten material into a plurality of fibers comprising:

a substantially cylindrically shaped metallic shell having an outer surface upon which the molten material impinges, said shell further including an inner cylindrical surface;

a coolant guide having an outer cylindrical surface coaxially disposed within said shell and closely spaced from the inner surface thereof so as to define a highly restrictive narrow flow passage;

liquid coolant supply means in communication with the passage for supplying coolant thereto whereby the veloc-

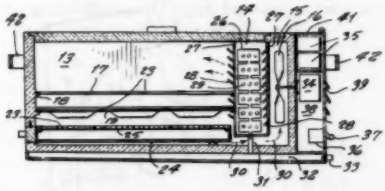
ity of the coolant will be accelerated to an ultrahigh velocity across the inner cylindrical surface of said shell as it passes through said passage;

said liquid coolant supply means including a centrally disposed inner conduit extending from an opening in the center of said coolant guide outwardly to the exterior of the spinner and an outer conduit coaxially arranged around said inner conduit and being spaced therefrom to provide a path therebetween for said liquid coolant, a plurality of transfer ports providing communication from said passage to said path.

4,468,932
FAN COOLER

Terry S. Bullard, 4741 Lonewillow Ln., Virginia Beach, Va. 23455

Filed May 27, 1983, Ser. No. 498,705
Int. Cl.³ F25D *3/02*
U.S. Cl. 62—421 1 Claim

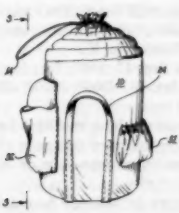


1. A fan cooler, comprising, in combination, a case of insulation material, a removable top cover of insulated material on said case, a food and beverage compartment, an ice compartment and a fan chamber in said case, said ice compartment being between said food and beverage compartment and said fan chamber, so that cold air from said ice chamber is blown into said food and beverage compartment; a fan being within said fan chamber and a battery powered refrigerator freezer, being removably placed in said ice compartment, and said ice cubes including means for being refrozen again, said means comprising each said ice cube constituting a hermitically sealed container of flexible material and including an expandable bull's eye, and a dry ice gelatin within said container; means for said ice cubes being arranged in a row within said ice compartment and air from said fan being blown along said row; and each said ice cube container including a plurality of grooves on its side walls, said grooves being angularly inclined respective to said row for maximum co[illegible]ct time with said air.

4,468,933
PORTABLE COOLER

Gary Christopher, 6902 E. Gary Rd., Scottsdale, Ariz. 85254

Filed Aug. 22, 1983, Ser. No. 524,932
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—457 20 Claims

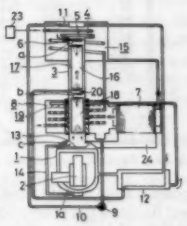


1. A portable cooler comprising an inner receptacle having heat conducting vertical walls and floor and an open top, an insulating member closely fitting the outside surface of said inner receptacle walls and floor; and an outer jacket enveloping said receptacle and insulating member; said insulating member having at least one aperture over said vertical wall, said jacket having pocket means registering with and open to said aperture, and closure means adapted to close said open top and closely fit a human hand as it is inserted empty into the receptacle and as it is withdrawn holding material from said receptacle.

4,468,934
ABSORPTION REFRIGERATION SYSTEM

Katsuyuki Mashimo, Ota; Teruo Masuda, Chiyoda; Toshio Nakayama, Omama; Masuyuki Hashimoto, Ojima, and Takeshi Kansi, Oizumi, all of Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of Osaka, Japan

Filed Dec. 13, 1982, Ser. No. 449,213
Claims priority, application Japan, Dec. 16, 1981, 56-203946; May 7, 1982, 57-76427; May 7, 1982, 57-66154[U]
Int. Cl.³ F25B *33/00*
U.S. Cl. 62—495 13 Claims



1. In an absorption refrigeration system having a generator, a rectifier, a condenser, an evaporator, an absorber and heat exchangers which are connected by means of conduits in an airtight manner so that a circulating path for refrigerant and absorbent solution is formed,

the improvement wherein the rectifier is mounted upright above the generator, said generator having an upper and lower portion and containing a liquid surface in its upper portion; the liquid receiver for receiving absorbent containing refrigerant being mounted below the rectifier and above the liquid surface in the generator, the receiver communicating with the lower portion of the generator through a liquid passage means, the liquid passage means bypassing the liquid surface in the generator.

4,468,935
DEVICE FOR REGULATING A JOULE-THOMSON EFFECT REFRIGERATOR

René D. M. Albagnac, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jan. 4, 1983, Ser. No. 455,570
Claims priority, application France, Jan. 19, 1982, 82 00756
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 JT 3 Claims

1. A device for regulating a Joule-Thomson effect refrigerator comprising:

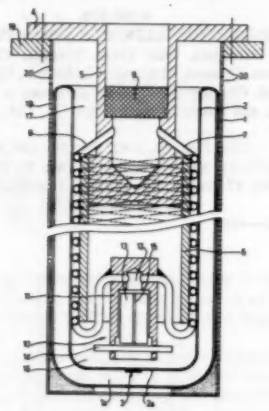
(a) an inlet neck connected to a supply of gaseous refrigerating fluid under pressure;

(b) a fluid expansion chamber in which said gaseous fluid expands thereby cooling and partly liquifying itself by Joule-Thomson effect;

(c) fluid transfer means connecting said inlet neck to said fluid expansion chamber, said fluid transfer means for transferring said refrigerating fluid from said neck to said

chamber along a fluid path and for providing heat exchange relation with said expansion chamber;

(d) restriction means interposed in said fluid path between said fluid transfer means and said expansion chamber for controlling delivery of said fluid, said restriction means for providing heat exchange with said chamber and having a passage cross-sectional area automatically decreasing with the decreasing temperature thereof thereby providing a main regulator of said delivery and having a minimum cross-sectional area maintained upon further decreasing of temperature which is sized to liquify partially said gaseous fluid in said fluid transfer means in a predetermined liquid to gas proportion sufficient to maintain a predetermined low temperature of said restriction means thereby causing said main regulator to remain closed, wherein said restriction means includes a tubular body having a bore and a core restrained in said bore against dragging and leaving therebetween a small passage, the cross-sectional area of said passage being controlled by difference in the coefficients of expansion of said bore and said core respectively, with an auxiliary passage of minimum cross-sectional area designed to remain open.

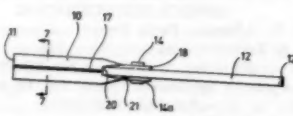


4,468,936

EARRING EARFITTING WITH PRIMARY AND SECONDARY LOCKING MEANS

Roy Kirk, and Alan Herbert, both of Hastings, England, assignors to Andra Jewels Limited, Hastings, England

Filed Sep. 22, 1983, Ser. No. 534,744
Int. Cl.³ A44C *7/00*
U.S. Cl. 63—12 **2 Claims**



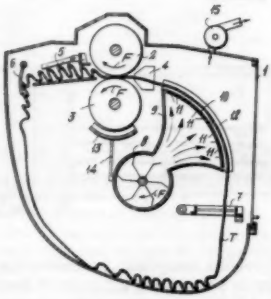
1. An earfitting for an earring to be worn on pierced ears, comprising an earring post which in use is positioned in the pierced hole in the ear lobe, and a spearhead hingedly mounted on the end of the earring post to be positioned behind the ear lobe, such that the earring post and spearhead can be mutually aligned to enable the earfitting to be passed through the ear lobe, whereafter the spearhead can be turned with respect to the earring post to secure the earfitting in place, and including primary locking means for temporarily locking the earring post and the spearhead in mutual alignment, said primary locking means including cooperating edges respectively on the earring post and on the spearhead which are adapted to engage each other in a snap-fit mechanism when the earring post and spearhead are mutually aligned, and secondary locking means completely independent of said primary locking means for resisting alignment of the earring post and the spearhead.

4,468,937

MACHINE FOR THE FULLING AND WASHING OF CORD FABRICS

Attilio Bertoldi, Via Luzzago 27, 25025 Manerbio (Brescia), Italy

Filed Jan. 20, 1982, Ser. No. 340,916
Claims priority, application Italy, Jan. 23, 1981, 19288 A/81
Int. Cl.³ D06B *3/26, 15/02, 15/09*
U.S. Cl. 68—19.1 **1 Claim**



1. A machine for washing fabrics in the form of a rope having ends which are attached to each other to form a fabric ring, the machine comprising:

(a) a tub;

at least a pair of rollers urged one against the other and disposed in the tub, the rollers defining means therebetween for the passage of the fabric ring, at least one of the rollers being actuated to cause rotation of the fabric ring in the tub at a speed sufficient to create a centrifugal force on the fabric ring;

(c) a constrictive passage means for receiving the fabric ring fed by the pair of rollers;

(d) a perforated surface in the tub located inside the circle defined by the fabric ring, the inner surface of the fabric ring being adapted to pass over the perforated surface; and

(e) means for blowing air through the perforated surface towards the inner surface of the fabric ring for swelling the fabric passing over the perforated surface and pneumatically stretching out folds or creases formed on the fabric.

4,468,938

TUBLESS WASHING MACHINE

Stephen L. McMillan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 12, 1983, Ser. No. 531,067
Int. Cl.³ D06F *23/04, 39/08*
U.S. Cl. 68—23.3 **2 Claims**

1. A vertical axis washing machine having an assembly of working parts for agitation of fabrics in a liquid during a washing cycle and centrifugal extraction of liquid from the fabrics during a draining cycle;

a cabinet structure including a base enclosing the assembly of working parts;

a mount including a support member secured to the assembly of working parts being adapted to move therewith during operation of the machine;

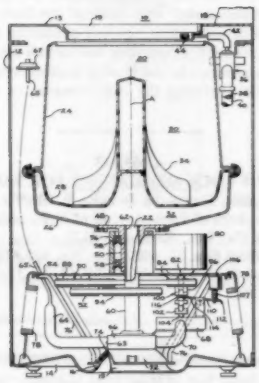
means for supporting said assembly of working parts including a generally spherical bearing surface formed on said cabinet base and a generally spherical lower support surface on said mount formed complementary to the shape of said bearing surface on said base being slidably mounted therein for pivotally supporting said assembly of working parts;

a combination tub/wash basket for receiving washing liquid and fabrics to be washed including a generally circular imperforate concave base having a drain opening at the center thereof and a generally cylindrical imperforate side wall portion extending upwardly from said base;

a perforated divider member secured within the basket above the base dividing said basket to provide an upper fabrics retaining area for effecting washing action on the fabrics being washed and a lower basket drain area;

a central shaft secured to said concave base of said basket extending downwardly therefrom being rotatably supported on said support member of said mount for rotation with said basket;

an axially aligned sump area arranged at the lower end of said central shaft;



a conduit in said central shaft extending from said drain opening to said axially aligned sump area for causing washing liquid to flow from said drain area to said sump area;

pump means carried by said mount including a conduit connected to said sump area for draining liquid from said sump area;

drive means on said mount including an electrically reversible motor for alternatively providing oscillatory motion and rotatable motion of the basket about its vertical axis;

basket drive means including means rotatably mounted on said motor shaft operably connected to said central shaft for imparting oscillating movement to said basket during said washing cycle and for imparting rotational movement to said pump means during said draining cycle;

pump drive means associated with said pump means for imparting rotational movement to said pump means; and

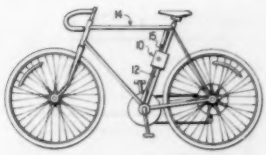
clutch means operable between said basket drive means and said pump drive means for causing said motor to be selectively connected between said basket drive means and said pump drive means.

4,468,939

ACCESSORY LOCK AND ARTICLE STORAGE DEVICE FOR BICYCLES AND THE LIKE

Michael C. Olshausen, 1816 Calorama Rd., Apt. 105, Washington, D.C. 20009

Filed Jan. 12, 1983, Ser. No. 457,459
Int. Cl.³ E05B *73/00*
U.S. Cl. 70—58 **6 Claims**



1. An accessory lock and article storage device adapted to be attached to a frame of a bicycle or the like comprising:

(a) first and second members each having a side wall connected to spaced-apart top and bottom walls, said side walls having facing portions, said first and second members together forming an enclosed storage space when brought into engagement with said frame member and said accessory, said top and bottom walls of said first and second members each having indented portions adapted to frictionally engage said frame member and said accessory, and

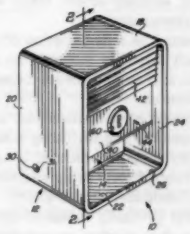
(b) locking means for securing said first and second members together and extending through and connected to a central area of said facing portions, said locking means being further capable of drawing said first and second members toward each other to vary the degree of said frictional engagement of said first and second members relative to said frame member and said accessory.

4,468,940

LOCK BOX

Richard W. Davis, 2107 E. Aspen, Tempe, Ariz. 85282

Filed Sep. 28, 1981, Ser. No. 305,992
Int. Cl.³ B65D *55/14*; E05B *65/52*
U.S. Cl. 70—63 **25 Claims**



1. A lock box for retaining an element to be secured, said lock box comprising in combination:

(a) means for defining sides of an enclosure within which the element may be contained;

(b) a face plate operatively associated with said defining means for limiting access to the enclosure, said face plate including a trough for receiving the element and retaining the element within the space defined by said face plate and said defining means;

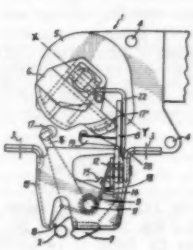
(c) means for pivotally attaching said face plate to said defining means to selectively open and close the enclosure;

(d) a flange depending from one of the sides of said defining means;
(e) an aperture developed within said face plate for penetrably receiving said flange on closure of said face plate; and
(f) means associated with said flange for accommodating lock means to prevent withdrawal of said flange through said face plate and thereby lock said face plate with said defining means and prevent unauthorized access to the enclosure.

4,468,941
ELECTRIC LOCKING DEVICE, PARTICULARLY FOR AN AUTOMOBILE HOOD

Jacques Bascou, Boulogne Billancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 25, 1982, Ser. No. 352,267
Claims priority, application France, Mar. 10, 1981, 81 04705
Int. Cl.³ E05B 65/12; E05C 3/06
U.S. Cl. 70—241 6 Claims

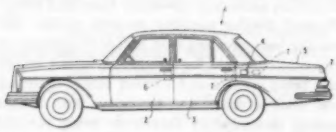


1. An electric locking device for a vehicle closure, said locking device comprising:
a keeper mounted on a first portion of said vehicle;
a movable bolt assembly mounted on a second portion of said vehicle, said second portion being movable relative to said first portion;
a motorized reversible reduction gear assembly mounted on said bolt assembly and including a rotatable shaft;
a control body mounted on said rotatable gear assembly shaft, said control body being mounted for pivoting about an axis perpendicular to said shaft;
a locking lever pivotally mounted on said bolt assembly, including a first portion engageable with said control body for moving said locking lever into a first position in engagement with said keeper;
a blocking lever pivotally mounted on said bolt assembly, said blocking lever including a first portion engageable, in a first position thereof, with said locking lever in said first position thereof for blocking movement of said locking lever from said first position thereof, and a second portion engageable with said control body for moving said blocking lever out of said first position thereof; and
first spring means biasing said locking lever out of said first position thereof and biasing said blocking lever into said first position thereof.

4,468,942
PNEUMATIC CENTRAL LOCKING SYSTEM

Christian Grabner, Gechingen; Klaus-Jürgen Heimbrodt, Böblingen, and Dieter Feichtiger, Aidlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 319,069
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041827
Int. Cl.³ E05B 65/36
U.S. Cl. 70—264 18 Claims

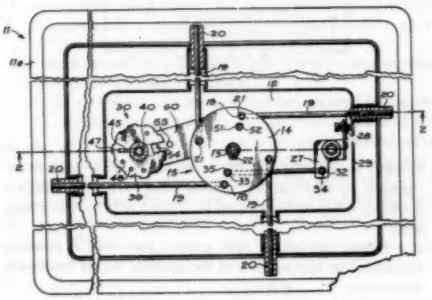


1. A pneumatic central locking system for locking a plurality of members, the system including locking means associated with each of said plurality for locking and unlocking the respective members, each of the locking means including a locking element, electrically driven pump means for providing pneumatic power for the locking system, line means for connecting the pump means with each of the locking elements, switch means for controlling a supply of electric current to the pump means, means for operating the switch means in dependence upon a pressure in the central locking system, and further means for operating the switch means as a function of time.

4,468,943
LIVE BOLT LOCK MECHANISM FOR SAFE DOOR

Patrick J. Beattie, Henrietta; Douglas E. Shaffer, and Richard J. Sylvester, both of Rochester, all of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,818
Int. Cl.³ E05C 9/06; E05B 63/14, 37/08
U.S. Cl. 70—302 13 Claims



1. A safe door live bolt lock mechanism comprising:
a. a rotatable idler arranged in a middle region of said safe door, said idler having crank locations;
b. a plurality of live bolts spaced around said safe door;
c. a plurality of connecting rods extending between said live bolts and said idler;
d. means for joining said connecting rods to said crank locations on said idler so that said connecting rods operate said live bolts when said idler turns;
e. a safe door handle mounted between said idler and an opening edge of said safe door;
f. a combination lock mounted on said safe door in a position spaced from both said idler and said handle;

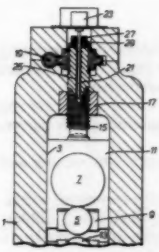
g. an actuator rotated by said handle;
h. an actuator link connected between said actuator and said idler for rotating said idler when said handle turns;
i. a lock link mounted on said idler for movement toward said combination lock when said idler turns; and
j. said lock link having a projection disposed adjacent said combination lock to block said lock link and said idler from movement unless a combination for said lock is fulfilled.

4,468,944

GAP INDICATING MEANS FOR A ROLLING MILL

Alan Foss, Wath-on-Dearne, Near Rotherham, England, assignor to Davy-Loewy Limited, Sheffield, England

Filed Jul. 16, 1981, Ser. No. 284,132
Int. Cl.³ B21B *31/34*
U.S. Cl. 72—35 **14 Claims**



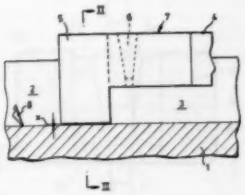
1. A rolling mill, comprising:
a fixed mill housing;
an upper roll assembly disposed within said fixed mill housing;
a lower roll assembly disposed within said fixed mill housing;
a nut disposed internally of said fixed mill housing;
screw means disposed internally of said fixed mill housing and threadedly engaged with said nut for rotational and axial movement relative to said nut, said screw means also being operatively engaged with one of said upper and lower roll assemblies so as to move said one of said upper and lower roll assemblies relative to said fixed mill housing and said other one of said upper and lower roll assemblies so as to adjust the gap defined between said upper and lower roll assemblies;
drive means disposed internally of said fixed mill housing and operatively engaged with said screw means for rotating said screw means relative to said nut whereby said screw means will axially translate relative to said nut and said fixed mill housing;
an axially extending bore defined within said screw means;
a first transducer component mounted upon said screw means; and
a second transducer component mounted upon said fixed mill housing so as to project into said axially extending bore of said screw means and operatively cooperate with said first transducer component mounted upon said screw means for indicating the disposition of said screw means and said one of said upper and lower roll assemblies relative to said fixed mill housing and said other one of said upper and lower roll assemblies, and thereby said gap defined between said upper and lower roll assemblies.

4,468,945

FRICTION-ACTUATED EXTRUSION

Norman R. Fairey, Carshalton, England, assignor to BICC Public Limited Company, London, England

Filed Jul. 19, 1982, Ser. No. 399,912
Claims priority, application United Kingdom, Jul. 24, 1981, 8122927
Int. Cl.³ B21C *23/00, 25/02*
U.S. Cl. 72—262 **7 Claims**



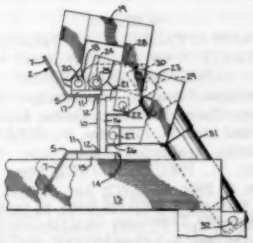
1. Apparatus for continuous friction-actuated extrusion characterised by tooling made at least in part from aged nickel-chromium base alloy with a yield strength of at least 1000 MN/m^2 at 20° C. (at 0.2% offset) and having an oxide film.

4,468,946

METHOD OF MAKING LAMBDA BEAMS

Joseph R. Driear, Thiensville, Wis., assignor to Kelley Company Inc., Milwaukee, Wis.

Filed Jun. 30, 1982, Ser. No. 393,663
Int. Cl.³ B21C *37/00*; B21D *11/20*
U.S. Cl. 72—379 **8 Claims**



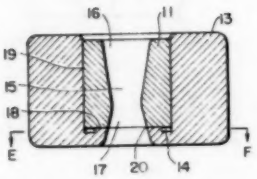
1. A method of making a beam having a generally lambda cross section from a flat sheet of metal, comprising the steps of
(a) bending the longitudinal side edge portions of a metal sheet to provide a generally U-shaped cross section composed of a generally flat central web and a pair of side flanges that are joined to the web at first junctions, each of said side flanges extending at an obtuse angle with respect to said web,
(b) bending the central web at locations spaced inwardly of said first junctions to provide a partially bent sheet including a generally flat base and a pair of side sections extending at an angle of about 90° to said base and joined to said base at corners, said first junctions joining said side sections to the respective side flanges, and
(c) bending each side section of said partially bent sheet inwardly about the corresponding corner in a direction toward the other side section to position each side section at an acute angle with respect to the base and to dispose the two side flanges in flatwise contiguous relation and provide a lambda configuration.

4,468,947

DIE

Tooru Takeda; Masakatsu Hayakawa, and Yasuo Inoue, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Dec. 28, 1981, Ser. No. 335,034
Claims priority, application Japan, Dec. 27, 1980, 55-185392
Int. Cl.³ B21C 3/02
U.S. Cl. 72—467 3 Claims



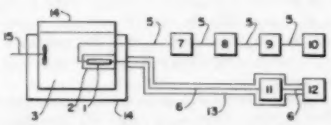
1. A die comprising a die body and a steel case, comprising:
a steel case comprising a cavity defined by an inner wall and a bottom wall converging at a corner,
a die body made of silicon nitride ceramic or a silicon carbide ceramic shrink fitted or force fitted into the cavity of said steel case, said die body having a side surface and a bottom surface engaging the inner wall and the bottom wall of said steel case, respectively, and
a wide recess having a width/depth ratio of from 7.14/1 to 23.33/1 cut in the inner surface of the bottom wall of said steel case along said corner where the bottom and the inner wall of said steel case meet so that a portion of the die body bottom surface is equal to said width of said recess and is unsupported.

4,468,948

METHOD AND APPARATUS FOR MEASURING THE CONCENTRATION OF A GASEOUS OR VOLATILE SUBSTANCE IN A LIQUID

Takehisa Nakayama, Takasago, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1982, Ser. No. 357,324
Claims priority, application Japan, Mar. 11, 1981, 56-34796[U]; Mar. 11, 1981, 56-34797[U]; Mar. 11, 1981, 56-34798[U]; Apr. 6, 1981, 56-51972; Apr. 6, 1981, 56-50076[U]; Apr. 20, 1981, 56-56880[U]; Apr. 20, 1981, 56-56881[U]; Apr. 27, 1981, 56-62348[U]; Apr. 27, 1981, 56-62349[U]; Apr. 30, 1981, 56-66304; May 9, 1981, 56-69709; May 11, 1981, 56-71127; Jun. 5, 1981, 56-83404[U]; Jun. 5, 1981, 56-83405[U]; Jun. 5, 1981, 56-83406[U]
Int. Cl.³ G01N 7/10
U.S. Cl. 73—19 42 Claims



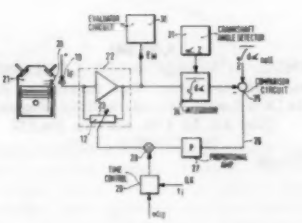
9. An apparatus for measuring the concentration of a gaseous or volatile substance in a liquid comprising:
a sampling means including a porous partition tubing made of tetrafluoroethyline resin and having liquid repellency and continuous minute channels extending through the porous partition tubing wall, the porous partition tubing having an average pore size of about 0.1 to about 1.0 μm and a porosity of about 20 to about 80%.

4,468,949

APPARATUS FOR DETECTING OPERATING DATA OF AN INTERNAL COMBUSTION ENGINE

Ernst Linder, Mühlacker; Karl-Otto Linn, Karlsruhe; Winfried Moser, Markgröningen; Klaus Müller, Tamm, and Erich Zabler, Karlsruhe, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 348,123
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105001
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 6 Claims



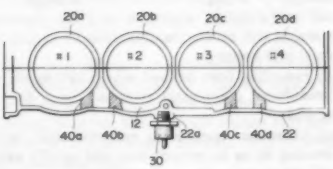
1. An apparatus for detecting operating characteristics of an internal combustion engine with a combustion chamber and a crankshaft, the apparatus having:
an optical sensor connected to the engine to detect engine operating characteristics which generates an output indicative thereof;
an amplifier connected to receive and amplify the optical sensor output;
an evaluation circuit connected to the amplifier to receive the amplified optical sensor output and to evaluate the operating characteristics of the engine as a function of the amplified optical sensor output;
a varying means connected to the amplifier to vary the transmission behaviour thereof, whereby the amplification factor of the amplifier is varied; and
the varying means comprises an integration circuit connected to the amplifier to integrate the amplified optical sensor output and generate an output indicating a mean value for the amplified optical sensor output.

4,468,950

ENGINE VIBRATION TRANSMISSION STRUCTURE

Kazuhiro Ishigami, and Haruo Yuzawa, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 17, 1982, Ser. No. 442,591
Claims priority, application Japan, Nov. 20, 1981, 56-186496
Int. Cl.³ G01L 23/22
U.S. Cl. 73—35 3 Claims



1. A structure for use in a multi-cylinder internal combustion engine including an engine block having an engine block outer wall, a plurality of cylinder walls each defining therein a cylinder, a cooling passage defined between said engine block outer wall and said cylinder walls, and a knock sensor attached on said engine block outer wall for sensing vibratory forces within

said engine and translating the sensed vibratory forces into a voltage signal, said structure comprising a plurality of ribs each extending through said cooling passage between said engine block outer wall and a corresponding one of said cylinder walls to provide a shortened vibration channel through which vibratory forces within the associated cylinder are transmitted to said knock sensor, said ribs being located to substantially equalize the length of said shortened vibration channels extending from said respective cylinder walls to said knock sensor.

4,468,951

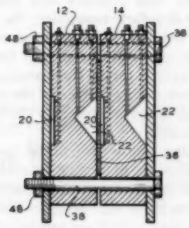
PERMEATION TESTING APPARATUS

David B. Garcia, 11409 Taterwood Dr., Austin, Tex. 78750; Bruce A. Sorenson, 44 Springlake, Dripping Springs, Tex. 78620; Lawrence H. Keith, 7605 Rock Point Dr., Austin, Tex. 78731; James M. Harless, 10005 Blue Martin, Austin, Tex. 78750; Douglas B. Walters, 6807 Breezewood Rd., Raleigh, N.C. 27607, and Andrew T. Prokopetz, B-6 Village Green, Chapel Hill, N.C. 27514

Filed Jan. 21, 1983, Ser. No. 459,953

Int. Cl.³ G01N *15/08*

U.S. Cl. 73—38 **19 Claims**



17. A permeation test cell for determining the permeation of a test chemical through a test material; said cell requires relatively small amount of the test chemical, and comprising:

first and second blocks of relatively chemically inert material, each said block having a cylindrical well in one face thereof, and a conical well in the opposed face thereof;

first and second flow channels passing from the periphery of each said block to its said cylindrical well to enable fluid flow to and from said well from the exterior of said block;

third and fourth channels passing from the periphery of each said block to its said conical well, to enable fluid flow to and from said well from the exterior of said block; and

means for fastening said blocks in face-to-face sealing contact, with a piece of the material to be tested between the adjoining faces of the blocks;

said blocks being fastenable in a first configuration wherein the cylindrical well of one block is opposed to the conical well of the other, and in a second configuration wherein the conical well of one said block is opposed to the conical well of the second said block;

whereby in said first configuration, said material may be tested for permeation of a liquid, gaseous or solid said test chemical from said cylindrical well through said material and into said conical well, by introducing said test chemical into said cylindrical well, sweeping said conical well with a collecting medium downstream of said conical well, and whereby in said second configuration said material may be tested for permeation of a gaseous test chemical from one said conical well to the opposed conical well, by introducing said gaseous test chemical into one said conical well, sweeping said opposed conicalwell with a collecting medium, and analyzing said collecting medium downstream of said conical well.

4,468,952

HYDRAULIC PIPE TESTING TOOL WITH COMBINED ANTI-EXTRUSION AND ANCHOR MEANS

Lloyd C. Rathburn, 701 Falling Leaf, Friendswood, Tex. 77546

Filed Jul. 30, 1982, Ser. No. 403,791

Int. Cl.³ G01M *3/28*

U.S. Cl. 73—40.5 R **8 Claims**

1. A pipe testing tool comprising: a body member; normally retracted packing and anti-extrusion means mounted on said body member; and hydraulically operable means for expanding said packing and anti-extrusion means, said anti-extrusion means carrying gripping means on the outer periphery thereof that are adapted to engage the inner wall of a well conduit within which the tool is positioned to prevent longitudinal movement of said tool therein, said anti-extrusion comprising separate arcuate segments that are held together as a generally cylindrical unit by resilient means that encircles said segments, said segements having upper and lower end portions, said gripping means being mounted on said end portions, each of said gripping means comprising an element fixed in a radially directed opening in said end portion, said element having projecting means on its outer periphery adapted to bite into the wall of a well conduit.

4,468,953

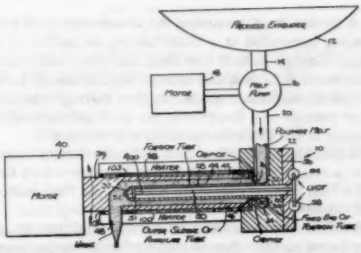
VISCOSITY AND ELASTICITY OF A FLUID

Ronald F. Garritano, Flemington, N.J., assignor to Rheometrics, Inc., Piscataway, N.J.

Filed Jul. 22, 1982, Ser. No. 400,683

Int. Cl.³ G01N *11/10*

U.S. Cl. 73—60 **20 Claims**



1. A torsion tube apparatus, for use in making on-line measurement of the viscosity and elasticity of a fluid comprising: a housing member;

an outer cylinder projecting from and rotatably connected to said housing member;

means for rotating said cylinder;

an elongated torsion tube disposed concentrically within and radially spaced from said cylinder, said tube having one end fixed to said housing member and having its other end freely disposed within said cylinder for torsional movement with respect to said fixed end, and an outer surface extending axially between said one end and said other end to establish an annular void between said outer surface of the torsion tube and said cylinder;

means for introducing a continuous flow of fluid into the interior of said cylinder at said one end of said tube and for removing the fluid from the cylinder at the other end thereof, wherein a rotating motion of the fluid, caused by rotation of said cylinder, exerts a torsional force directly on the outer surface of said torsion tube;

a torsion-indicating shaft extending concentrically through said torsion tube and having one end fixed to said other end of said torsion tube, said shaft extending through said housing; and

indicator means coupled to the other end of said shaft;

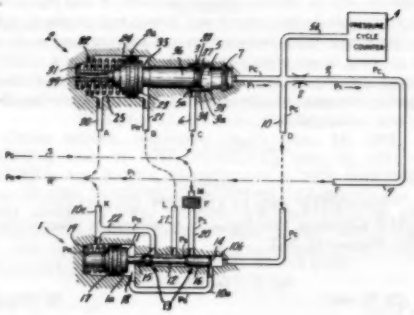
wherein said torsional force on said outer surface of said torsion tube provides the sole source of rotative movement for said shaft and wherein said assembly provides a smooth axial path for the fluid which flows continuously through said annular void between said outer cylinder and said outer surface of said torsion tube.

4,468,954

DEVICE FOR DETERMINING THE CONCENTRATION OF SUSPENDED SOLID CONTAMINANTS IN A FLUID

Robert Lanctot, St. Petersburg, Fla., and Bernard F. Silverwater, Plainview, N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,360
Int. Cl.³ G01N *15/06*
U.S. Cl. 73—61 R **6 Claims**



1. A device for determining the concentration of solid contaminants suspended in a fluid, having an orifice or narrow passage through which the fluid carrying suspended solid contaminants is passed, and monitoring the rate of build-up of the solid contaminants unable to pass through the orifice or narrow passage as a function of the concentration of the contaminants in the fluid, comprising, in combination:

(i) a fluid inlet and a fluid outlet for attachment respectively to a system supply fluid line and system return fluid line;

(ii) a fluid passage extending between the fluid inlet and the fluid outlet;

(iii) a first flow restriction across the fluid passage, sized to prevent passage therethrough of solid contaminant particles to be sensed and estimated, and suspended in fluid flowing through the restriction, and collect such particles upstream thereof;

(iv) a second flow restriction across the fluid passage, downstream of the first and controlling fluid flow through the passage and the first flow restriction to less than a selected maximum;

(v) first valve means movable only between first and second positions, having a first pressure receiving surface selectively exposed to system return fluid pressure or to fluid pressure downstream of the first flow restriction and a second pressure receiving surface exposed solely to system return fluid pressure;

(vi) first biasing means biasing the first valve means towards the second position against pressure downstream of the first flow restriction, the valve means being moved into the first position against the biasing means whenever fluid pressure downstream of the flow restriction is greater than system return fluid pressure; and otherwise being moved into the second position by the biasing means;

(vii) second valve means movable only between first and second positions having first and second pressure-receiving surfaces exposed, respectively, to either system supply or system return fluid pressure, according to the position of the first valve means, and fluid pressure downstream of the first flow restrictor; and to system return fluid pressure;

(viii) second biasing means biasing the second valve means towards the second position against system supply or system return fluid pressure and fluid pressure downstream of the first flow restriction; the valve means being moved into the first position whenever system supply fluid pressure downstream of the first flow restriction greater than system return fluid pressure is applied to the first pressure-receiving surface of the second valve means and otherwise being moved into the second position by the biasing means;

(ix) the first valve means controlling application of system supply fluid pressure to the first pressure-receiving surface of the second valve means, and permitting such application only when in the first position; whereby the first and second valve means each are moved against their respective biasing means into their first positions while the first flow restriction remains in a relatively contaminant-unblocked condition, and whenever the flow through the first flow restriction becomes blocked by contaminants and the first flow restriction is in a relatively contaminant-blocked condition, so that the fluid pressure differential thereacross exceeds a predetermined minimum, both valve means are moved into their second positions by their respective biasing means;

(x) means for cleaning away contaminants collected at the first flow restriction and restoring it to a contaminant-unblocked condition whenever the second valve means is in the second position; and

(xi) means responsive to fluid pressure differential between system return fluid pressure and fluid pressure downstream of the first flow restriction for signalling each time such fluid pressure differential exceeds a predetermined minimum.

4,468,955

CHASSIS DYNAMOMETER

Toshihiro Yamasaki, Kobe, and Kensaku Jinbo, Akashi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1982, Ser. No. 393,089
Claims priority, application Japan, Jun. 26, 1981, 56-100155
Int. Cl.³ G01L *5/13*
U.S. Cl. 73—117 **4 Claims**

1. A fixed system for testing front engine front drive and front engine rear drive vehicles with a chassis dynamometer, said system including,

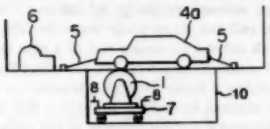
a test space having a first level and a pit thereunder with its bottom on a second lower level;

rolls positioned in the pit and adapted to contact with drive wheels of a vehicle which is standing still on the first level,

a dynamometer positioned in the pit and coupled to a a common shaft for said rolls, and

an engine cooling blower positioned in front of the vehicle on the first level,

wherein the improvement comprises:



a chassis which is movable back and forth along the bottom of the pit and upon which said rolls and the dynamometer are mounted,

whereby the vehicle may be tested in substantially the same standing still position in the test space no matter whether the vehicle is front engine front drive or front engine rear drive.

4,468,956

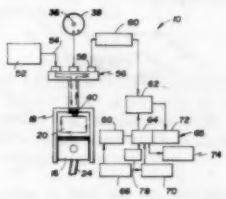
METHOD AND APPARATUS FOR UTILIZING MICROWAVES FOR INTERNAL COMBUSTION ENGINE DIAGNOSTICS

Angelo L. Merlo, 2115 E. Long Lake Rd., Troy, Mich. 48098

Filed Oct. 26, 1982, Ser. No. 436,872

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—117.3 **46 Claims**



1. A method for providing diagnostic information related to a diagnostic condition in a multiple stroke, internal combustion engine having a crankshaft which rotates in response to motion by a piston in a cylinder of the engine, said method comprising the steps of:

radiating a radio frequency wave into a combustion chamber defined by the piston and the cylinder;

moving the piston in the cylinder through at least one stroke to excite at least one resonance of the wave in the chamber;

detecting the reflected analog radio frequency signal occurring during the motion of the piston;

generating a timing signal corresponding to crankshaft rotation;

converting the analog radio frequency signal to a plurality of digital signals related to the amplitude of the radio frequency signal and the frequency of the timing signal;

calculating the location of the resonance from the digital signals with respect to the angle of the crankshaft;

calculating a parameter of the resonance from the digital signals; and

correlating the calculated parameter with a reference of the same parameter to determine the diagnostic condition.

4,468,957

APPARATUS FOR MEASURING THE MASS OF A FLOWING MEDIUM

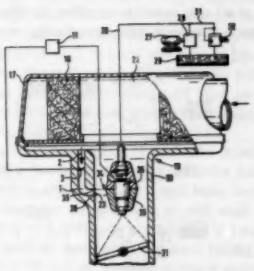
Jaihind S. Sumal, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1982, Ser. No. 395,876

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130626

Int. Cl.³ G01F *5/00*

U.S. Cl. 73—118 **4 Claims**



1. In an apparatus for measuring the mass of a flowing medium, which includes a flow conduit for the medium which has a restricted section, a bypass line which has a mouth connected to said restricted section and through which a mass of the medium flows which is at a predetermined proportion with respect to a mass of the medium flowing through the flow conduit and discharges from said mouth into said restricted section, at least one temperature-dependent resistor disposed in the bypass line, and a regulating means for regulating the temperature and/or resistance of the at least one temperature-dependent resistor, in accordance with the flowing mass of medium wherein a control variable of the at least one temperature-dependent resistor, is a standard for the flowing mass of medium, the improvement wherein said restricted section includes a shaped body which experiences a medium flow around it, said shaped body being disposed coaxially within the said flow conduit to form said restricted section of the flow conduit for the medium and is embodied such that the flow cross section of the medium in the flow direction becomes smaller up to the mouth of the bypass line and beyond the mouth of the bypass line widens by an amount which corresponds to the bypass line cross section at the mouth, and said shaped body is embodied such that the widening of the flow cross section for the medium by the amount of the bypass line cross section at the mouth of the bypass line is effected over a length extending from an upper edge to a lower edge of the mouth in the flow direction.

4,468,958

CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION TESTING DEVICE

Hiroshi Takeshita, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1982, Ser. No. 412,099

Claims priority, application Japan, Aug. 31, 1981, 56-137323

Int. Cl.³ G01M *13/02*

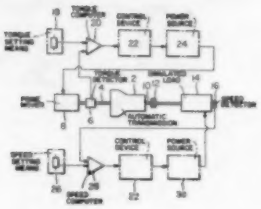
U.S. Cl. 73—118 **1 Claim**

1. A control system for a testing device for automatic transmissions, including a prime mover torque source to supply torque to the input shaft of an automatic transmission under test, and a simulated load to subject to load the output shaft of said automatic transmission, to simulate the operating conditions of an actual automobile, comprising:

an input shaft side torque controlling feedback loop includ-

ing a torque reference signal producing means which provides a torque reference signal for controlling the torque applied to the input shaft of said test transmission by said prime mover torque source, a torque detector which produces an actual torque signal corresponding to the actual torque being applied to the input shaft of said test transmission by said prime mover torque source, and a torque computer which compares said torque reference signal and said actual torque signal to control the torque applied to said input shaft of said test transmission at a value determined by said torque reference signal producing means; and

an output shaft side speed controlling feedback loop including a speed reference signal producing means which provides a speed reference signal for controlling the speed of the output shaft of said test transmission by means of said simulated load, a speed detector which produces an actual speed signal corresponding to the actual speed of said output shaft of said test transmission, and a speed computer which compares said speed reference signal and said actual speed signal to control the speed of the output shaft of said test transmission by means of said simulated load, whereby the speed of the output shaft of said test transmission is maintained substantially constant at a gear shift point, in simulation of the actual circumstances of an actual automobile application, regardless of the change in speed of the prime mover torque source that results from the different gear ratios before and after the gear shift.



4,468,959

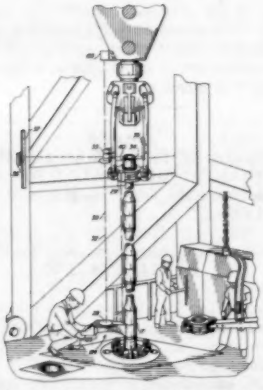
METHOD AND APPARATUS FOR TALLYING PIPE

Royce G. Roberts, P.O. Box 1296, Kenai, Ak. 99611

Filed May 10, 1982, Ser. No. 376,860

Int. Cl.³ G01B *21/02*

U.S. Cl. 73—151 **23 Claims**



1. In a drilling rig having a traveling block assembly to which there is connected a pipe elevator by which a pipe stand can be elevated above the derrick floor thereof; the pipe stand being made of series connected pipe lengths each having a shoulder formed at each opposed end thereof, the combination with said drilling rig of apparatus for tallying the length of the pipe stand while it is suspended above the derrick floor;

said apparatus includes a transmitter and receiver means having an antenna, means by which said antenna is positioned in indexed relationship respective to a pipe shoulder which defines the lower end of a pipe stand;

a deflector means mounted on said traveling block assembly for deflecting a beam from said transmitter back to said receiver antenna to thereby provide a first signal related to the distance from the antenna to the deflector;

another transmitter and receiver means connected to another antenna; said another antenna being positioned in indexed relationship respective to said deflector; a second deflector, said another antenna and said second deflector are positioned to direct another beam substantially horizontally across the upper terminal end of the stand of pipe; to provide a second signal related to the distance measured from the upper end of the stand of pipe to the first recited deflector;

means for adding the first and second signals together to provide the measured length of the stand of pipe.

4,468,960

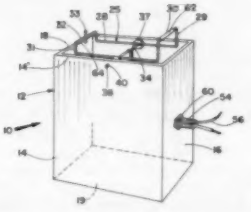
GLIDE PATH INDICATOR FOR AIRCRAFT

Emanuel S. Schechter, 17 Driftwood Dr., Glen Cove, N.Y. 11542

Filed May 6, 1982, Ser. No. 375,579

Int. Cl.³ G01C *21/00*; B64F *1/18*

U.S. Cl. 73—178 R **10 Claims**



1. An instrument for indicating that an aircraft in which the instrument is mounted is disposed in a predetermined glide path with a runway reference point, comprising:

a support mountable in stationary position in the aircraft;

an elongated pivotable member carried by said support to pivot angularly around a horizontal axis which is parallel to a lateral axis of said aircraft;

front and rear spaced apart sighting elements carried in horizontally spaced positions by said member, said elements being respectively elevated different distance from said member so that said sighting elements are normally disposed in different vertically spaced horizontal planes; and

stabilizing means carried by said member and freely swingable therewith to pivot said member so that when one of said sighting elements is aligned with said runway reference point and said aircraft is manuevered so that the other of said sighting elements, said runway reference point and said one sighting element are aligned, said aircraft will be in said predetermined glide path.

4,468,961

FLUID DIRECTION METER SUITABLE FOR ANGLE OF ATTACK METER FOR AIRCRAFT

Lauren V. Berg, 5145 Harvest Estates, San Jose, Calif. 95135

Continuation of Ser. No. 198,116, Oct. 17, 1980, abandoned.
This application Dec. 29, 1982, Ser. No. 454,497
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—180 18 Claims

1. As an article of manufacture, a fluid transducer, comprising:

(a) a fluidic amplifier adapted to continuously receive a plurality of separate inwardly directed fluidic input functions possessing individual characteristics and combined by said fluidic amplifier to produce a single fluidic output function the characteristics of which constitute the vector sum of the characteristics of said plurality of separate inwardly directed fluidic input functions; and

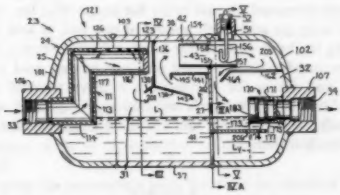
(b) rotor means having a circumferential portion operatively associated with said fluidic amplifier and rotatably responsive to said single fluidic output function to indicate by the extent and direction of its rotation the characteristics of said single fluidic output function, said rotor including a plurality of vanes situated about at least a part of the circumferential portion, two of said vanes define an aperture which cooperates with the single fluidic output function to retain the rotor in a stabilized position, with the remaining vanes serving to provide rotation of the rotor toward the stabilized position.

4,468,962

ENERGY LOSS DETECTION SYSTEM

David A. Keech; Robert T. Kirchner, both of Three Rivers; Nicholas M. Vander Wal, Kalamazoo; John E. Sorenson, Three Rivers, all of Mich., and Mark D. Driscoll, Milton, Fla., assignors to Armstrong International, Inc., Three Rivers, Mich.

Filed Mar. 5, 1982, Ser. No. 355,054
Int. Cl.³ G01F *15/08*
U.S. Cl. 73—200 9 Claims



1. An apparatus for measuring the rate of flow of the vapor phase of a fluid flow, in the presence of an unknown quantity of a liquid phase in the fluid flow, comprising:

a hollow separator casing divided into inlet and outlet chambers by a baffle;

an inlet opening in the casing wall for admitting said fluid flow into said inlet chamber;

an outlet opening for discharging said fluid flow from said outlet chamber;

means defining a liquid flow path from said inlet chamber to said outlet chamber and including a liquid flow opening through said baffle;

means defining a separate vapor flow path from said inlet chamber to said outlet chamber, said vapor flow path being spaced above the normal liquid level in said casing;

vapor flow responsive means at said vapor flow path to sense the rate of vapor flow therethrough;

wherein the improvement comprises

an inlet tube communicating with said inlet opening and facing into said casing, said inlet tube comprising an inlet segment extending from said inlet opening into said casing an outlet segment transversely offset from said inlet segment and extending generally longitudinally of said casing near a peripheral wall thereof and spaced from the liquid flow opening through said baffle, said inlet tube having an intermediate portion connecting said inlet and outlet segments and with ends angled with respect thereto, the free end of said outlet segment being closed;

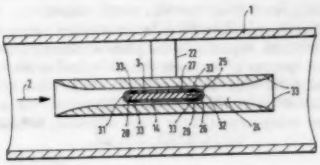
wall means sealing the interior of said tube from the interior of said casing except at reduced diameter holes through said wall means, the diameter of said holes being less than the inside diameter of said tube at said wall means, said wall means of said inlet tube comprising the portion of the peripheral wall of said outlet segment facing the peripheral wall of said casing, which portion is provided with a series of said holes facing toward said peripheral wall of said casing and of progressively smaller diameter toward the closed end of said outlet segment, said holes being spaced downstream of the intermediate portion of said inlet tube, the connection of said inlet segment and outlet segment being arranged to deflect fluid flow away from at least the upstream ones of said holes.

4,468,963

METHOD AND APPARATUS FOR MEASURING THE MASS OF A PULSATING MEDIUM FLOWING IN A FLOW CROSS SECTION

Werner Schäuble, Freiburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,246
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135793
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 17 Claims



1. In a method for measuring the mass of a pulsating medium flowing in a flow cross section, which includes the steps of regulating a current flowing through a temperature-dependent measuring resistor disposed in the flow cross section so as to maintain the measuring resistor at a predetermined temperature above the temperature of the medium, and providing a measurement signal corresponding to the measuring resistor current and representing the flowing mass of medium, the improvement which comprises the steps of:

determining the direction of flow of the medium by regulating a current flowing through a first temperature-dependent indication resistor so as to maintain the first indication resistor at a predetermined temperature above the medium temperature, the first indication resistor being disposed within the flow cross section so that, for a given flowing mass of medium, greater heat transfer from the first indica-

tion resistor into the medium occurs when the medium is flowing in a first direction than when the medium is flowing in an opposite second direction;

measuring a resistance value of the first indication resistor; and

influencing the measurement signal in accordance with medium flow direction.

4,468,964

LIQUID METER

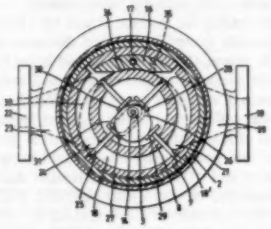
Adrianus Groeneweg, Dordrecht, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,159

Claims priority, application Netherlands, Oct. 8, 1981, 8104577

Int. Cl.³ G01F *3/08*

U.S. Cl. 73—259 2 Claims



1. Liquid meter provided with:

a cylindrical rotor of which the section parallel to the axis on both sides thereof is U-shaped, the ends of the legs sealing against a flat base plate so that an annular measuring space is formed

inlet and outlet ports being provided at diametral points with respect to each other in the base plate and opening in the measuring space, the inlet serving as a feeding aperture through which medium is fed to the measuring space and the outlet serving as discharge aperture through which medium is discharged from the measuring space,

a plurality of radially directed vanes which are guided by slots in the rotor are moved radially by a control mechanism in such a way that at each revolution of the rotor a predetermined amount of medium is always enclosed and is transported from the inlet to the outlet,

separating means placed inside the annular measuring space at a location opposite to the place enclosing the predetermined amount of medium, characterized in that the cylindrical outer side of the rotor is made medium tight by means of parts rotating with the rotor, the separating means being mounted for a self adjusting action.

4,468,965

TEST METHOD FOR ACETYLENE CYLINDERS

Philip R. Blackburn, Lewiston, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 5, 1982, Ser. No. 439,634

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—587 9 Claims

1. A method for determining the integrity of solidified porous filler material within a cylinder comprising:

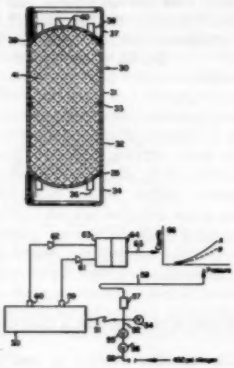
(a) providing a cylinder having solidified porous filler material in its interior;

(b) adapting sensing means to the cylinder capable of sensing acoustic emission counts generated during pressurization of said cylinder;

(c) pressurizing said cylinder with a fluid to a desired pressure to generate acoustic emission counts;

(d) establishing a relationship of emission counts generated during step (c) as a function of increasing pressure;

(e) determining whether the relationship of acoustic emission counts to pressure established in step (d) is essentially a linear relationship; and



(f) on the basis of the determination made in step (e), determining the integrity of the filler material within the cylinder.

4,468,966

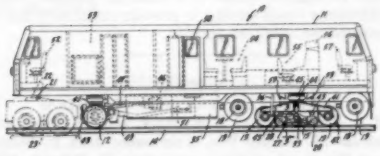
RAILROAD TRACK INSPECTION CAR

Bruce W. Bradshaw, Ludington, Mich., assignor to Jackson Jordan, Inc., Ludington, Mich.

Filed Sep. 1, 1982, Ser. No. 413,615

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—636 4 Claims



1. A rail inspection car comprising, in combination, a body, a two-axle, four-flanged wheel, railroad truck having side frames supporting said body on track at one end of the body, a track sensor mounted on one of said frames in established relationship to the underlying rail, a pair of flanged wheels floatingly mounted on said body for supporting the other end of said body on said track, means at one end of said body for coupling the body to a tractor-truck, wheels carrying highway tires mounted near the body end not having said couplimg means, and means for varying the relative vertical displacement of said flanged wheels and said highway tired wheels on said body for converting said car from an on-track vehicle to an off-track trailer.

4,468,967

ACOUSTIC PLUG RELEASE INDICATOR

Ernest E. Carter, Jr., Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Nov. 3, 1982, Ser. No. 438,675

Int. Cl.³ G01H *1/00*

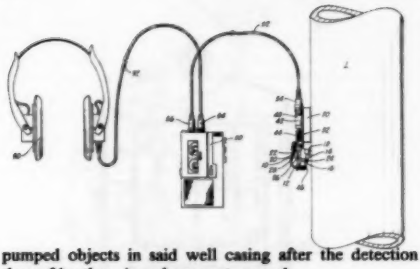
U.S. Cl. 73—661 13 Claims

1. An acoustic release indicator system for detecting the movement of free-falling plugs, balls, or pumped objects in well casing in oil and gas well operations, said system comprising:

a microphone system releasably secured to a portion of said

well casing, having a portion thereof in contact with a portion of said well casing for detecting the movement of said free-falling plugs, balls, or pumped objects in said well casing;

a recording system connected to the microphone system for recording the movement of said free-falling plugs, balls, or



pumped objects in said well casing after the detection thereof by the microphone system; and

a headphone listening system releasably connected to the recording system for listening to the movement of said free-falling plugs, balls, or pumped objects in said well casing.

4,468,968

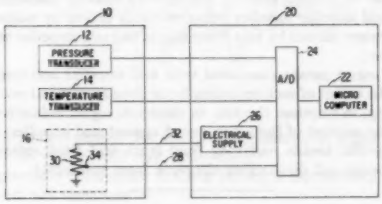
METHOD AND ARRANGEMENT FOR PROVIDING INFORMATION TO DEFINE THE VALUES OF A SET OF PARAMETERS WHICH CHARACTERIZE AN ELEMENT

David F. Kee, Glenside, Pa., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 21, 1983, Ser. No. 487,425

Int. Cl.³ G01D *3/04*; G01L *19/04*

U.S. Cl. 73—708 **11 Claims**



1. A method of inputting to a microcomputer or the like input data which defines a value for each of a plurality of parameters so as to characterize an element, comprising the steps of:

grouping the parameters such that there is provided a plurality of unique combinations each of which defines a combination of possible specific values for each of said parameters;

assigning an electrical value corresponding to each of said unique combinations;

providing for said element a voltage supply having an output coupled to said microcomputer; and

adjusting said voltage supply so that the electrical value of said output equals the assigned electrical value corresponding to the combination of parameter values which characterizes said element.

4,468,969

PRESSURE INDICATOR PARTICULARLY FOR RESPIRATORS

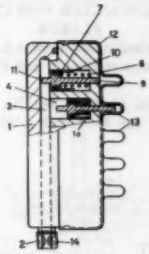
Willi Schwartz, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 28, 1983, Ser. No. 470,306

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1982, 3209601

Int. Cl.³ G01L *7/16*

U.S. Cl. 73—744 **6 Claims**



1. A pressure indicator particularly for respirators, comprising a housing having a pressure chamber connectable to a pressure source, a plurality of individual indictor chambers connected to said pressure chamber in said housing, an indicator piston member slidable in each of said indicator chambers, and having a feeler portion which, in an indicating position, extends out of said housing and a non-indicating position is located entirely within said housing, said indicator piston member having a portion exposed to the pressure of said pressure chamber, biasing means biasing each respective indicator piston member at a distinct pressure in a direction to urge said indicator piston member toward a non-indicating position, each indicator piston member being movable against said biasing means at a pressure corresponding to its distinct biasing means pressure to an indicating position extending out of said housing.

4,468,970

COMPRESSION MEASURING DEVICE

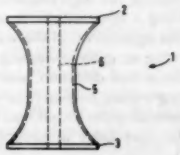
Joachim Leonhardt; Bruno Wagener, both of Essen; Hans-Dieter Klein, Hattingen, and Wilfried Siefer, Heiligenhaus, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,853

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1981, 3122866

Int. Cl.³ G01B *11/20*

U.S. Cl. 73—762 **16 Claims**



1. Apparatus for the approximate determination of a force acting on a supporting frame comprising first and second pressure plates, a compression member constructed of cast iron disposed between the plates, the deformation of which under a compressive force is an indicator of the magnitude of such force, and a layer of a material applied to the surface of the

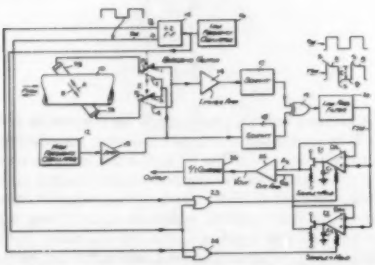
member and adapted to separate from the surface in response to a deformation of the member.

4,468,971

ULTRASONIC FLOWMETER FOR CLEAN AND DIRTY FLUIDS

Peter J. Herzl, Morrisville, and Robert J. Augustine, Horsham, both of Pa., assignors to Fischer and Porter Company, Warminster, Pa.

Filed Jul. 16, 1982, Ser. No. 398,808
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.28 **7 Claims**



1. An ultrasonic flowmeter for measuring the flow rate of clean or dirty fluids, said flowmeter comprising:

A. a pipe through which the fluid to be metered is conducted, said pipe being provided with upstream and downstream transducers;

B. means including a reversing switch to alternately excite said transducers with a high-frequency transmission signal at a relatively low periodic switching rate whereby a beam emitted by the excited transducer is propagated through the fluid at angle to the flow axis of the pipe and is received by the other transducer to yield a received signal that is displaced in phase from the transmission signal to an extent depending on the transmit time of the beam through the fluid, the beam reversing direction during each operating cycle of the switch;

C. means coupled to the transducers to convert the received signals yielded thereby into a square wave;

D. means to compare the square wave with a reference wave derived from the transmission signal to produce a comparison wave;

E. means to pass the comparison wave through a low-pass filter to exclude the high-frequency content thereof, the filter yielding a square wave in which the voltage drop between the upper level of the wave during a stable portion following an initial switching surge representing the transit time in one direction, and the lower level of the wave during a stable portion following an initial switching surge representing the transit time in the reverse direction reflects the time delay difference between these transit times; and

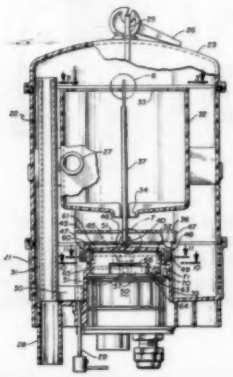
F. means to derive a flow rate reading from said time delay difference, said means including a pair of sample and hold circuits which are alternately activated, whereby one circuit holds the voltage representing the high level of the filter square wave and the other the low level of the filter square wave, said circuits being operative only during the stable portions of said voltage levels.

4,468,972

FLOW METER WITH A MOTOR DRIVEN IMPELLER

Gene A. Fisher, Lafayette, Colo., and Raymond E. Umbaugh, Sr., deceased, late of Boulder, Colo. (by Phyllis L. Umbaugh, administratrix), assignors to Universal Cooperatives, Inc., Minneapolis, Minn.

Filed Apr. 19, 1982, Ser. No. 369,540
Int. Cl.³ G01F 1/80
U.S. Cl. 73—861.38 **18 Claims**



1. A fluid meter comprising:

(a) inlet means for receiving a predetermined fluid;

(b) fluid receiving means connected to said inlet means for receiving such fluid therefrom;

(c) a rotatably mounted impeller member associated with said fluid receiving means and receiving such fluid thereagainst from said inlet means, said impeller member being constructed and arranged to accelerate such fluid primarily radially and thereby cause such fluid to create a force retarding the rotation of said impeller while receiving such fluid thereagainst;

(d) powered drive means associated with said impeller member in driving relation and located directly therebelow; said impeller member being rotatably driven by magnetic means carried by said drive means and said impeller member;

(e) sensor means associated with said impeller and sensing the extent of such retarding force thereagainst and providing, in response thereto, an electrical signal indicative of the amount of fluid introduced against said impeller; and

(f) outlet means receiving fluid from said fluid receiving means and discharging the same from said meter.

4,468,973

REMOTE SEQUENTIAL GAS SAMPLER FOR BLASTING AREAS

Anthony T. Iannacchione, Pittsburg; David H. Lawhead, Avalon, and John H. Perry, Scenery Hill, all of Pa., assignors to The United States of America as represented by the Secretary of Interior, Washington, D.C.

Filed Apr. 25, 1983, Ser. No. 488,479
Int. Cl.³ G01N 1/22, 1/26
U.S. Cl. 73—863.01 **5 Claims**

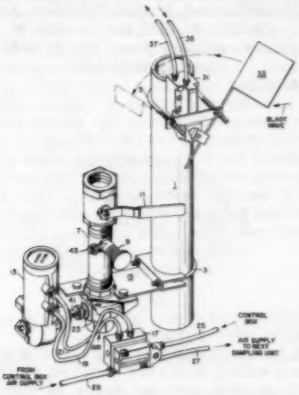
1. A blast activated gas sampling system for use in an underground mine comprising:

a blast activated switch means for receiving and being responsive to a blast whose gas is to thereafter be sampled;

a pneumatically operated sample unit assembly to retain the ambient gas after the switch activating blast occurs;

a pneumatically operated control means for controlling the operation of the sample assembly by sending pneumatic signals to said sample unit assembly at preselected time

intervals, said control means being operatively connected to said switch for its initial activation, and said sample unit assembly to control the gas sample collection timing; and



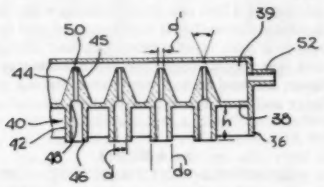
a source of pressurized gas in fluid communication with said control means to provide the power for its operation.

4,468,974

PIPETTE SAMPLER AND RELATED APPARATUS

Donald Malinoff, Granada Hills, Calif., assignor to Culture Tek Corporation, Granada Hills, Calif.

Filed Oct. 2, 1981, Ser. No. 307,745
Int. Cl.[3] B01L *3/02*
U.S. Cl. 73—863.32 11 Claims



1. A pipette sampler for removing a plurality of liquid samples from a multi-well tray, comprising:

a generally rectangular housing having a top member, side and end members;

a generally flat, rectangular plate having a depending skirt integrally formed therewith, said plate along with said top, side and end members of said housing defining a first chamber;

a patterned array of microliter collector conduits integrally formed on said plate, each said conduit having a first lower portion and second upper coaxial portion, said second upper portion in flow communication with said first chamber and having inclined walls integral with and extending away from said plate, and said first lower portion depending away from said second portion and said plate, and configured for insertion into said multi-well tray; and further wherein the area for fluid flow in said first portion is larger than the area for fluid flow in said second portion, and the opening for fluid in said second portion is sized such that precise filling of each said conduit is encouraged while substantially precluding fluid from overflowing out of said conduit in said housing; and

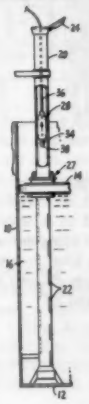
means for forming a vacuum in said first chamber whereby a predetermined quantity of liquid flows into each said collector conduit.

4,468,975

GAUGE WELL FLOAT FOR FLOATING ROOF STORAGE TANKS

James A. Sayles, Kensington, and William J. Norwood, III, Rodeo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 9, 1982, Ser. No. 406,511
Int. Cl.[3] B65D *87/18;* G01N *1/16*
U.S. Cl. 73—863.81 8 Claims



1. In a floating roof tank including a tubular gauge well having a plurality of slots spaced along the length thereof to permit sampling of the liquid at various levels in the tank, a device for minimizing evaporation through any of the gauge slots that are located above the level of the liquid while being adapted to be readily removed to enable samples of stock in the tank to be taken through the gauge well, comprising:

a float comprised of a cylindrical member having tapered, closed ends, said float having an outside diameter that is substantially the same as the inside diameter of the gauge well;

an elongated inner cylindrical wall forming a bore along the vertical axis of said float; and

a cable having one end thereof attached to the top of said gauge well so as to be suspended in the center thereof, and weight attached to its other end near the bottom of said gauge well, said cable passing through said bore to thereby center said float in the gauge well and said weight engaging said float when the cable is pulled out of the gauge well.

4,468,976

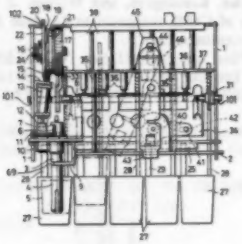
PUSHBUTTON-OPERATED WAVEBAND OR STATION SELECTOR

Takao Chaki, and Nobuaki Watanabe, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 340,942
Claims priority, application Japan, Jan. 22, 1981, 56-6545; Jan. 23, 1981, 56-7283; Jan. 29, 1981, 56-10239; Feb. 13, 1981, 56-18142; Feb. 13, 1981, 56-18143; Feb. 13, 1981, 56-18144; Mar. 31, 1981, 56-47852
Int. Cl.[3] H03J *5/12, 1/08;* F16D *13/44*
U.S. Cl. 74—10.33 10 Claims

1. A pushbutton operated selector apparatus, comprising a front panel, side plates disposed at opposite ends of said front panel, a bracket mechanism which includes a pushbutton supported on an outer side of said front panel for reciprocal move-

ment between two positions, a mechanism which includes a rotatably supported tuning shaft, a coil, a core shifting mechanism supporting a core for movement within said coil, clutch means cooperable with said core shifting mechanism for selectively effecting movement of said core within said coil in response to one of movement of said pushbutton and rotation



of said tuning shaft; a power switch for selectively applying electrical power to a circuit of said apparatus; and an operating lever which is adapted to turn on and turn off said power switch, said tuning shaft being movable axially and operatively engaging said operating lever, movement of said tuning shaft in respective axial directions causing said operating lever to turn said power switch on and off.

4,468,977

POWER DRIVE FOR ELECTRIC SWITCHGEAR IN WHICH DRIVING POWER IS ELASTICALLY TRANSMITTED THERETO

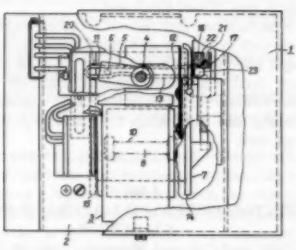
Gerd Kummerow; Werner Troebel; Bernhard Preuss, and Reinhard Zeuke, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,587

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014825

Int. Cl.³ H01H *3/22, 71/70*

U.S. Cl. 74—108 **16 Claims**



1. In a power drive for electric switchgear having a driven member in which the driving force is elastically transmitted to an actuating member of the switchgear via a slide, the improvement comprising U-shaped leaf spring means having elongate substantially parallel legs coupled to the driven member and to the slide for elastically transmitting the driving force to the slide, said legs extending transversely to the direction of motion of the slide, said driven member being a crank arm having a crank pin engaging said spring means between the legs thereof.

4,468,978

STEERING WHEEL WITH A RESIN CORE

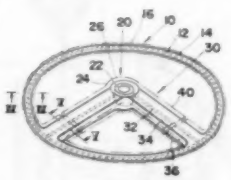
Michiyoshi Takahara; Nobuo Saegusa, both of Yokohama, and Kazuyoshi Nishijima, Shizuoka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 16, 1981, Ser. No. 283,796

Claims priority, application Japan, Sep. 26, 1980, 55-134878

Int. Cl.³ B62D *1/04*

U.S. Cl. 74—552 **3 Claims**



1. A steering wheel comprising:

a central portion including a cylindrical metal core engageable to a steering shaft, a first resin layer surrounding said cylindrical metal core and having an elastic modulus sufficient for resisting against bending stress applied to the steering wheel, and a second resin layer of substantially soft material and surrounding said first resin layer;

a spoke portion having and extending from said central portion and including a first metal core extending from said cylindrical metal core substantially along the axis of said spoke portion, said first resin layer surrounding said first metal core, wherein said first resin layer surrounding said first metal core has a horizontally elongated rectangular cross section with vertically aligned reinforcement ribs respectively extending along the axis of said spoke portion in parallel relationship with respect to each other; and

a rim portion including a first rim portion and a second rim portion, said first rim portion having a second metal core connected to said first metal core of said spoke portion, said first resin layer surrounding said second metal core and said second resin layer surrounding said first resin layer, and said second rim portion having said first resin layer and said second resin layer in coaxial arrangement.

4,468,979

BREATHER VENTILATION SYSTEM OF POWER-TRANSMISSION CASING FOR USE IN MOTORCYCLE

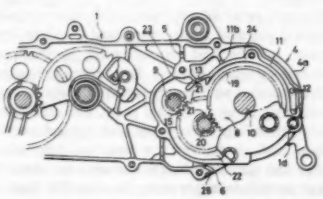
Takashi Inagaki; Goroei Wakatsuki, and Shigeo Kimura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1981, Ser. No. 262,247

Claims priority, application Japan, Jul. 25, 1980, 55/104575[U]

Int. Cl.³ F16H *57/02*

U.S. Cl. 74—606 R **9 Claims**



1. In a power transmission housing for a motorcycle, including a first casing accommodating therein a power transmission mechanism and a second casing accommodating therein a gear transmission mechanism and having an oil accumulation cham-

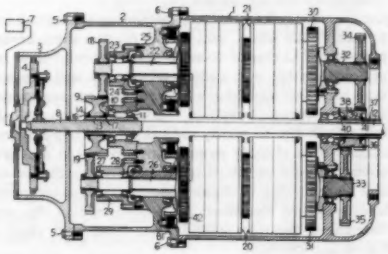
ber at a bottom portion thereof, said first casing having a larger volume than said second casing, the improvement wherein said second casing comprises a main body and a cover coupled together, interfacing portions of said main body and said cover defining a main breather passage and a branch breather passage, said main breather passage having a first breather hole opening to the atmosphere at a position to the center rear of said second casing and having a top portion at a longitudinally center portion of said second casing, said main breather passage extending arcuately upwardly from said first breather hole to said top portion, said main breather passage extending from said top portion through a second breather hole opening to the interior of said second casing, and said branch passage extending forwardly of said main passage and through a third breather hole into the interior of said first casing, said first casing including a lower breather hole venting said first casing to atmosphere and acting as a water exit for any water which may enter therein via said first breather hole.

4,468,980

TWIN CLUTCH PACK FOR POWER SHIFT TRANSMISSION

Roy W. Johansen, West Allis, Wis., assignor to Allis-Chalmers Corp., Milwaukee, Wis.

Filed Nov. 27, 1981, Ser. No. 325,499
Int. Cl.³ F16H *37/06, 57/00*
U.S. Cl. 74—705 **10 Claims**



1. A power shift transmission for a vehicle comprising, a single input drive shaft, twin power shift clutch pack assemblies, a torque equalizer connected between said input drive shaft and said twin power shift clutch pack assemblies transmitting power from said single input drive shaft equally to said twin power shift clutch pack assemblies including, a driving gear, twin driven gears, load shiftable means for equalizing the drive forces to said twin driven gears, a common countershaft operating with each of said twin power shift clutch pack assemblies, a single output drive shaft, an output torque equalizer driven by said twin power shift clutch pack assemblies equalizing torque from said power shift clutch pack assemblies, including twin driving gears, an output driven gear, a load shiftable means for equalizing the drive forces from said twin driving gears thereby driving said output shaft of said transmission.

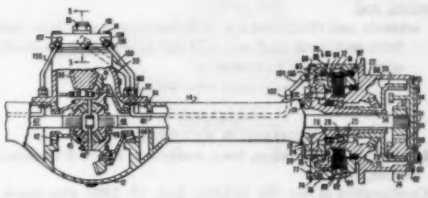
4,468,981

DRIVE AXLE AND FLUID PUMP ASSEMBLY

Donald L. Ries, Dearborn Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 2, 1981, Ser. No. 307,840
Int. Cl.³ F16H *1/38, 1/40*
U.S. Cl. 74—713 **4 Claims**

1. A vehicle drive axle and fluid pump assembly comprising an axle including a differential housing mounting a differential carrier having a forward facing necked down portion and a differential mechanism driven by a shaft extending through and mounted for rotation in a bore in said differential carrier, a forward facing surface at the end of said necked down portion of said carrier, a pair of pump housing members, each of said pump housing members having an aperture concentric with said shaft, means piloting said housing members relative to the axis of rotation of said shaft, means securing said pump housing members to said forward facing surface with said housing members defining a radially extending annular cavity



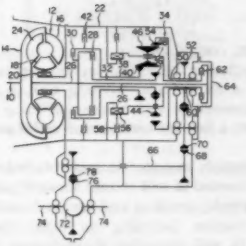
therebetween, a fluid inlet port and a fluid outlet port communicating with said cavity, fluid displacement means including at least one element concentric with said shaft and rotatable in said cavity and means drivingly engaging said shaft and said rotatable element for displacing fluid from said inlet port to said outlet port under pressure.

4,468,982

VEHICLE DRIVING APPARATUS

Yasuhiko Fujita, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 311,017
Claims priority, application Japan, Oct. 15, 1980, 55-144111
Int. Cl.³ F16H *57/10, 47/00*
U.S. Cl. 74—762 **2 Claims**



1. A vehicle driving apparatus comprising an input shaft connected to a drive shaft of an engine through a turbo type hydraulic transmission, a planetary gearing of Ravigneaux type composed of a front sun gear, a rear sun gear, a short pinion gear arranged for meshing engagement with said rear sun gear, a long pinion gear arranged for meshing engagement with said front sun gear and said short pinion gear, a carrier arranged to rotatably support said short and long pinion gears and to be rotatable around its own axis, and a ring gear arranged for meshing engagement with said long pinion gear and connected to an output gear, an intermediate transmission shaft disposed in a relation substantially parallel to the central axis of rotation of said planetary gearing, said intermediate transmission shaft being provided at one end thereof with a driven gear making meshing engagement with said outer gear and being connected at the other end thereof to a final reduction device, a first clutch controllably connecting said input shaft to said rear sun gear, a second clutch controllably connecting said input shaft to said front sun gear, a first brake for braking the rotation of said front sun gear, a second brake for braking the rotation of said carrier, and a third clutch disposed on the side opposite to said planetary gearing with respect to said output gear for

controllably connecting said input shaft to said carrier, said planetary gearing, said first and second clutches, said first and second brakes and said output gear being provided between said turbo type hydraulic transmission and said third clutch, said clutches and said brakes being selectively actuated for providing speed stages of four-forward and one-reverse speeds, and

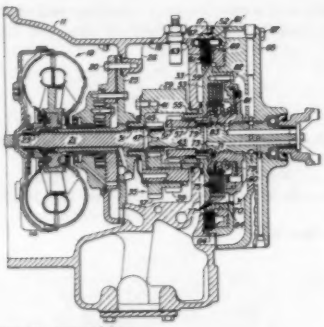
wherein said third clutch is mounted so as to be detachable from said input shaft and said carrier by being positioned at an end of the transmission.

4,468,983

TRANSMISSION REVERSER UNIT

Harold F. Vieth, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 216,032, Dec. 15, 1980, abandoned.
This application Jul. 13, 1983, Ser. No. 513,496
Int. Cl.³ F16H *3/44*; F16D *13/00, 13/52*
U.S. Cl. 74—784 **5 Claims**



5. A reverser, comprising:

a housing including a forward section and rear section divided by a formed rear housing wall, a forward wall fixably mounted in said housing dividing said forward section into a first forward section and a second forward section;

a carrier rotatably mounted in said forward wall and said rear wall located in said second forward section;

means for drivably rotating said carrier located in said first forward section including an input shaft rotatably mounted in and extending through said forward wall drivably coupled to said carrier;

a doubled planetary pinion rotatably mounted on said carrier including a first planetary pinion and a second planetary pinion coupled to rotate on said carrier at the same rate, said first planetary pinion to have a larger radius than said second planetary pinion;

a sun shaft having an axial extension co-linear to said input shaft extending from said second forward section beyond said rear section of said housing and located centrally to said carrier;

a first sun pinion fixably mounted around said sun shaft in constant mesh with said first planetary pinion;

a second sun pinion rotatably mounted on said sun shaft having a rearwardly axially extending section, said rearwardly axial extension being generally radially opposite said rear wall, said second sun pinion in constant mesh with said second planetary pinion whereby rotation of said carrier causes said double planetary pinion to attempt to rotate said first and second sun pinion at different rates;

a clutch drum generally located in said rear section of said housing having a centrally located collar fixably mounted around said rearwardly axially extending section of said second sun pinion;

a plurality of parallelly aligned first friction drum around the outer periphery of said clutch disc;

a rear cover detachably mounted to said housing enclosing said rear section of said housing having rotatably mounted therein and extending therethrough said sun shaft;

a plurality of pins extending into said rear wall of said housing and said rear cover;

a plurality of second parallely aligned friction discs suspended from and slidable axially along said pins, said second friction disc interdispursed between said first friction disc;

biasing means for biasing said axially extreme friction disc apart such that one said extreme friction disc is biased against said rear wall and the other extreme friction disc is biased against a portion of said rear cover;

a brake piston slidably mounted in a cavity of said rear cover opposite said first and second friction disc to slide axially to assume an engaged position biasing against said first and second friction disc and a disengaged position spaced apart from said first and second friction disc;

means for selectively actuating said brake piston to assume an engaged and disengaged position;

a clutch hub fixably mounted around said sun shaft;

a plurality of third friction discs axially splined around the outer periphery of said clutch hub;

a plurality of fourth friction discs interspersed between said third friction disc;

a clutch covver rotatably mounted on said sun shaft rearwardly beyond said clutch hub;

a plurality of cap screws fixably mounting said clutch cover to said clutch drum, said fourth friction discs having a plurality of U-shaped recesses spaced around their outer peripheral edge into mating relation to said cap screw stem such that said fourth friction discs are supported by said cap screws to restrain rotational motion and allow said fourth disc to axially slide along said cap screws;

a clutch piston slidably mounted in a recess in said clutch cover opposite said third and fourth friction disc to allow said clutch piston to slidably assume an engaged position biasing against said third and fourth friction disc and a disengaged position spaced apart from said third and fourth friction disc;

means for selectively actuating said clutch disc to assume an engaged and disengaged position; and

means for biasing said clutch piston in said disengaged position whereby removal of said clutch cover allows items through with further disassemble of said reverser.

4,468,984

EPICYCLIC TRANSMISSION

Pier Guido Castelli, Turin; Giorgio Lupo, Rivalta, and Diego Burla, Bruino, all of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Mar. 3, 1982, Ser. No. 354,268
Int. Cl.³ F16H *15/50, 15/16, 55/34*
U.S. Cl. 74—796 **13 Claims**

1. An epicyclic transmission with steplessly-variable speed control including:

a housing;

a drive shaft extending within said housing;

a driven shaft extending within said housing;

a planet carrier in said housing and mounted on said drive shaft for rotation by the latter;

a plurality of planet wheels in the form of tapered rollers which are supported for rotation by said planet carrier and are spaced angularly from one another about the axis of rotation of said planet carrier, said planet wheels having a larger frusto-conical portion and a smaller frusto-conical portion adjacent the larger base of the larger frusto-conical portion, whereby the radially external generatrices of said larger frusto-conical portions extend substantially parallel to the axis of rotation of said planet carrier;

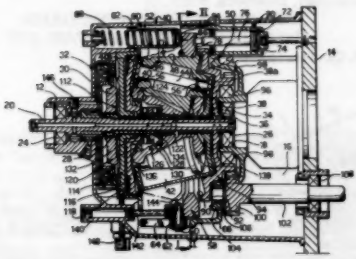
respective rolling bearings which support said planet wheels for rotation on said planet carrier;

a governing annulus locked for rotation with said housing and having its internal surface in rolling contact with the surfaces of said larger frusto-conical portions of said planet wheels;

adjustment means for axial displacement of said governing annulus along said larger frusto-conical portions of said planet wheels;

a driven annulus rotatable coaxially with said planet carrier for rotating said driven shaft, said annulus having an internal conical surface complementary to the surfaces of said smaller frusto-conical portions of said planet wheels, and

means for pressing together in pressure contact the surface of said smaller frusto-conical portions of said planet



wheels and said complementary conical surface of said driven annulus, and the surfaces of said larger frusto-conical portions of said planet wheels and the internal surface of said governing annulus,

the improvement comprising said transmission further including a freely-rotatable sun wheel in the form of a sleeve which is coaxial with said planet carrier and has two axially spaced bearing surfaces, and each said planet wheel having two bearing surfaces which are complementary with said axially spaced bearing surfaces and are in rolling contact therewith, and

wherein said means for pressing together in pressure contact said smaller frusto-conical portions of said planet wheels and said complementary conical surface of said driven annulus, and said larger frusto-conical portions of said planet wheels and said internal surface of said governing annulus, include an oleodynamic actuator.

4,468,985

PLANETARY GEARING SYSTEM

Sven W. Nilsson, Partille, Sweden, assignor to SKF Nova AB, Goteberg, Sweden

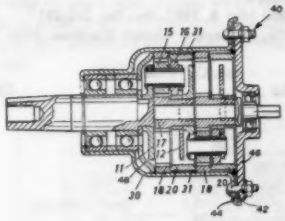
Continuation-in-part of Ser. No. 176,263, Aug. 8, 1980, abandoned, which is a continuation of Ser. No. 944,970, Sep. 22, 1978, abandoned. This application May 25, 1982, Ser. No. 381,970

Claims priority, application Sweden, Nov. 29, 1977, 7713480

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—801 **3 Claims**

1. A planetary gearing system comprising a planet carrier and planet gear wheels and planet friction wheels supported on planet wheel shafts on said planet carrier, said planet gear wheels cooperating with a gear ring encircling them and a sun gear wheel, said planet friction wheel cooperating with a friction ring circumscribing them and with a sun friction wheel, a housing enclosing the planet gearing system, said friction ring and ring gear being disposed in side by side abutting relation in said housing, means (46,48) engageable with said friction ring and ring gear at opposite axial ends which is selectively adjustable axially (40,40a) to providing an adjustable friction force between said ring gear and friction ring so



that they rotate in said housing when subjected to a torque exceeding a torque determined by said friction force.

4,468,986

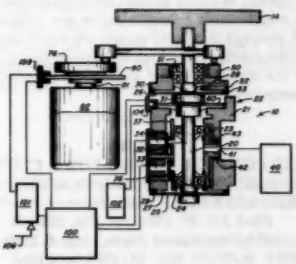
ADJUSTABLE INTERMITTENT INCREMENTAL ADVANCE SYSTEM

Pierre G. Foret, Falmouth, Mass., assignor to Foret Systems, Inc., Falmouth, Mass.

Filed Apr. 2, 1981, Ser. No. 250,429

Int. Cl.³ B23Q *17/00*

U.S. Cl. 74—822 **10 Claims**



1. A rotating shaft driven, intermittent incremental advance system comprising

a rotatable shaft for driving a work take-off in stop-start rotary increments,

a clutch disk operatively engaged with said shaft,

a brake disk operatively engaged with said shaft,

a first stepper disk means operatively engaged with said shaft for movement therewith and comprising a plurality of circularly arranged indicator first indexing means,

a rotary work take-off device fixed to said shaft,

a flywheel means carrying a portion of an eccentric, pivotally mounted crank arm,

a second drive portion of said crank arm being eccentrically pivotally mounted on a drive shaft,

said drive shaft carrying a second stepper disk means operatively engaged therewith for movement therewith and having a second indexing means mounted for rotating movement therewith,

a drive means for providing constant rotation to said drive shaft translated to incremental movement of said flywheel means with stop, start movement of said rotatable shaft being actuated by said brake disk and clutch disk respectively,

and first and second sensor means engaged with said first and second indexing means to provide for said stop, start movement in accurate increments and without accumulated incremental distance error from one incremental movement to another.

4,468,987

CONTROL SYSTEM FOR MULTI-RATIO GEARING

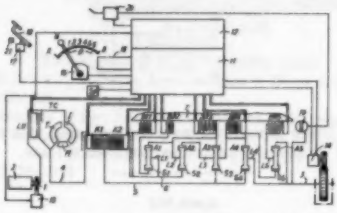
Albert A. Miller, Galashiels, Scotland, assignor to AB Volvo, Goteborg, Sweden

Filed May 8, 1981, Ser. No. 261,811

Claims priority, application United Kingdom, May 9, 1980, 8015371

Int. Cl.³ F16H 5/48

U.S. Cl. 74—862 20 Claims



1. A control system for a multi-ratio gearing for automatically causing shifting between ratios of the gearing at threshold rotational speeds in response to variations in rotational speed in the gearing, in which a driver-operated control is provided and positionable in at least three different selected settings for biasing the control system to raise or lower the threshold rotational speeds to define several optional levels of threshold speeds at which shifts between ratios are initiated, and the raised and lowered threshold speeds are unaffected by power applied to the gearing over a normal power range, the selected setting of the driver-operated control being effective over a range of inter-ratio changes.

4,468,988

SLIP CONTROL SYSTEM FOR A CLUTCH

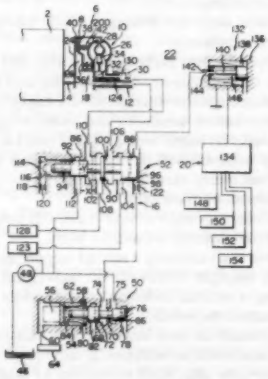
Takeo Hiramatsu, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 288,106

Claims priority, application Japan, Aug. 4, 1980, 55-107030; Mar. 18, 1981, 56-37891; Apr. 21, 1981, 56-61060

Int. Cl.³ B60K 41/16, 41/19

U.S. Cl. 74—868 20 Claims



1. A torque transmitting system comprising a drive shaft rotating with torsional vibration, an output shaft, a friction clutch unit interposed between said drive shaft and said output shaft, fluid pressure-operated actuating means for causing engagement and disengagement of said friction clutch unit, means for detecting the operating condition of a drive power source driving said drive shaft, means for detecting the difference between the rotation speed of said drive shaft and that of said output shaft, means for setting the rotation speed difference between said drive shaft and said output shaft in response to the output signal from said operating condition detecting means, and fluid pressure control means for controlling the pressure of actuating fluid supplied to said fluid pressure-operated actuating means so that the rotation speed difference detected by said rotation speed difference detecting means approaches the rotation speed difference set by said rotation speed difference setting means.

4,468,989

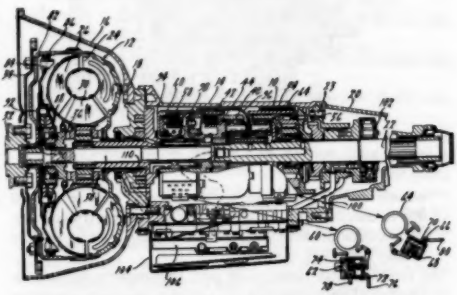
POWER TRANSMISSION MECHANISM WITH A HYDROKINETIC TORQUE CONVERTER HAVING A LOCKUP CLUTCH

Stanley D. Rosen, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 9, 1981, Ser. No. 319,830

Int. Cl.³ B60K 41/12; F16H 47/00, 3/74

U.S. Cl. 74—869 5 Claims



1. In a transmission control system for planetary transmission gearing adapted for multiple ratio torque delivery from a vehicle engine to a driven shaft, said transmission having fluid pressure operated clutches and brakes for establishing the various ratios:

a fluid pressure operated brake servo adapted to anchor one element of said gearing to effect a ratio change to an intermediate speed ratio, said servo having a cylinder and a double acting brake cylinder cooperating with said cylinder to define a brake release pressure chamber and a brake apply pressure chamber;

a fluid pressure operated clutch adapted to connect together two elements of said gearing to establish a high speed ratio;

a control pressure source;

a governor valve means for developing a speed pressure signal;

a valve circuit providing controlled communication between said pressure source and said brake servo and between said pressure source and said clutch, said clutch and said brake release chamber being connected;

a timing control valve means in said circuit for regulating the pressure in said clutch and in said brake release chamber during a ratio change from said high speed ratio to said intermediate speed ratio;

a shift valve means for distributing selectively fluid pressure to said apply pressure chamber and exhausting pressurized fluid from said release chamber and said clutch to effect said ratio change;

a high speed orifice and a low speed orifice situated in parallel relationship in the exhaust fluid flow path for said release chamber; and

a speed pressure signal sensitive servo release shuttle valve means in the exhaust flow path that includes one of said

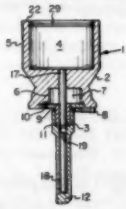
orifices for blocking said one orifice at high speeds thereby increasing the servo apply time during a ratio change.

4,468,990

SOCKET WRENCH ASSEMBLY

Jeffrey B. Hile, R.D. #1, Box 122, Imperial, Pa. 15126

Filed Mar. 23, 1983, Ser. No. 477,928
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—60 **7 Claims**



1. A reversible ratchet socket wrench assembly including a cylindrical handle portion having a base, a cavity located within the lower portion of said base and a gear mechanism located within said cavity, a downwardly depending stub extending from said gear mechanism with its lower end located below the bottom of said base, an elongated downwardly extending drive shaft attached to and coaxial with the lower end of said stub, a cylindrical sidewall extending upwardly from the perimeter of said base to define an open top recess above the upper surface of said base adapted to receive a plurality of sockets, the lower end of said drive shaft having means to attach said drive shaft to a socket, an elongated upper bore coaxial with said base and said stub and extending from the upper surface of said base through said ratchet mechanism and said stub to the lower end of said stub, an elongated lower bore coaxial with said drive shaft extending from the upper end of said drive shaft toward the lower end of said drive shaft and terminating within said drive shaft, said lower bore connecting with said upper bore to form an elongated storage bore adapted to receive a power bar.

4,468,991

TOOL TURRET

Walter Reusch, Dettingen/Erms, and Günther Schips, Kappishäusern, both of Fed. Rep. of Germany, assignors to Sauter Feinmechanik GmbH, Metzingen, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,661
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3134970
Int. Cl.³ B23B *29/32*
U.S. Cl. 82—36 A **5 Claims**

1. A tool turret of the type comprising a housing, a rotatable tool head and drive means for rotating the head to any of several rotational positions wherein the drive means comprises the combination of

a drive shaft;

cam drive means for selectively locking and unlocking the rotatable head, said cam drive means comprising:

an axially movable locking element mounted coaxially with said drive shaft and having a first annular set of axially extending gear teeth at one end thereof,

a rotatable control element concentric with said shaft;

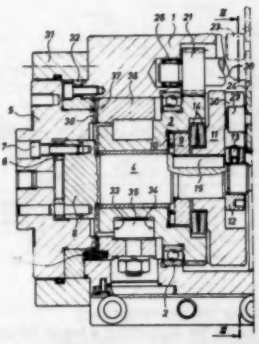
means for rotating said control element;

means around said control element defining an annular cam groove;

means on said housing for rotatably supporting said tool head coaxially on said drive shaft;

means on said tool head defining a second annular set of axially facing gear teeth extending toward and at least partially overlapping said first set of teeth on said locking element;

a stationary gear ring fixedly attached to said housing, said gear ring having a third annular set of axially facing gear teeth concentric with and lying in substantially the same plane as said second set and partially overlapping said first set; and



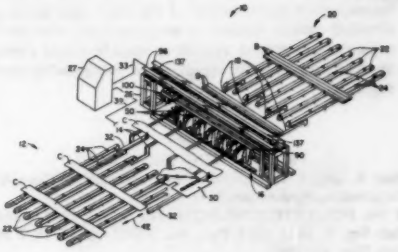
cam follower means mounted in said locking element and engaging said cam groove, whereby axial movement of said locking element in response to rotation of said control element locks said head against rotational movement when said first set of teeth simultaneously engages said second and third sets and releases said head for movement when said teeth are disengaged.

4,468,992

AUTOMATIC SAWING SYSTEM

Ronald W. McGeehee, 9049 East Rd., Redwood Valley, Calif. 95470

Filed Dec. 13, 1982, Ser. No. 449,340
Int. Cl.³ B27B *1/00, 5/04*
U.S. Cl. 83—56 **15 Claims**



12. A method for ripcutting an elongate cant simultaneously along at least two parallel, spaced-apart lines to remove the wane edges thereof and leave an optimum remaining board area, said method comprising:

advancing the cant transversely along a path;

optically scanning the cant at a first location along the path to determine the profile of both wane edges;

determining the location of parallel lines which will yield the optimum board area free of the wane edges; and

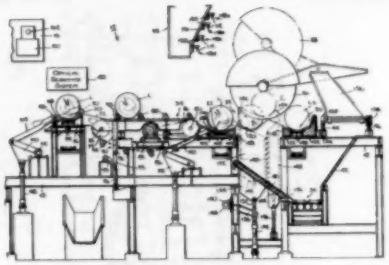
cutting the cant simultaneously along each line while said cant is held firmly in place at a second location along the path.

4,468,993

SMALL LOG BUCKING SYSTEM

Jack R. McCown, Lake Oswego, and J. Rogers Firth, Portland, both of Oreg., assignors to International Paper Company, New York, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,658
Int. Cl.[3] B26D 7/06
U.S. Cl. 83—112 11 Claims



1. A log bucking system, comprising:

cutting bed means for supporting a log to be cut;

saw means for cutting a log supported by said cutting bed means;

input means for moving a log to said cutting bed means to be cut; and

output means for transporting log segments cut by said saw means away from said cutting bed means; said cutting bed means comprising stationary means defining a first trough for receiving a log from said input means and first and second movable means that are movable between a retracted and a raised position, and that cooperate, when at said raised position, to define a second trough at an elevated cutting position; said second movable means comprising a plurality of means for supporting different portions of the length of a log, each said supporting means being lowerable, independently of the other said supporting means to cause a log segment cut from a log and supported by at least one said supporting means to move from said elevated cutting position onto said output means, while the remainder of the log is retained at said elevated cutting position, in such a manner that the log segments are spaced at least a predetermined distance apart on said conveyor means, thereby singulating the log segments.

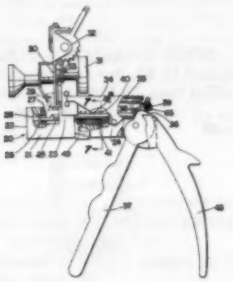
4,468,994

KEY CUTTING DEVICE

Nathan S. Lieptz, Beachwood, Ohio, assignor to Congoleum Corporation, Portsmouth, N.H.

PCT No. PCT/US81/01183, § 371 Date Sep. 3, 1981, § 102(e) Date Sep. 3, 1981, PCT Pub. No. WO83/00835, PCT Pub. Date Mar. 17, 1983
PCT Filed Sep. 3, 1981, Ser. No. 310,232
Int. Cl.[3] B26D 5/10
U.S. Cl. 83—414 13 Cla. 15

1. In a key cutting device having a body, a movable cutting tool carried by said body, a key blank support member yieldably mounted on said body and selectively movable to bring the key blank into and out of the path of cutting movement of said cutting tool, depth-of-cut gauging means carried by said body in the path of movement of said support member, and actuating means for effecting operative movement of said cutting tool and said support member: the improvement comprising a cutting tool in the form of a longitudinally movable key shearing punch, said punch presenting a first cutting portion at its forward cutting end and an enlarged second cutting portion rearwardly of said first cutting portion, and adjustable punch-stop means carried by said body and selectively movable to arrest



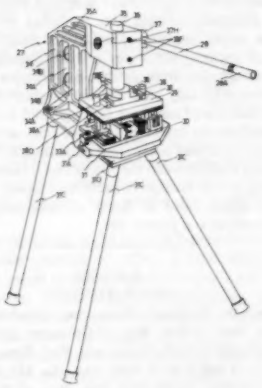
forward cutting movement of said punch before said enlarged second portion reaches operative cutting position.

4,468,995

APPARATUS FOR MANUFACTURING FRAMES FROM ALUMINUM PROFILE RAILS

Jose M. Mireles-Saldivar, Monterrey, Mexico, assignor to Cuprum, S.A., Monterrey, Mexico

Filed Jan. 11, 1982, Ser. No. 338,290
Int. Cl.[3] B23D 23/00
U.S. Cl. 83—620 3 Claims



1. Portable apparatus for precisely shaping by cutting and punching the ends of preformed aluminum rail members of particular complex profile designs for forming in situ frames therewith for windows and doors, comprising in combination, a base member with a shaped groove running therethrough, a lower die support member, means seating in the groove to clamp the lower die support member immovably in place on the base member, a vertically oriented support column reinforced by ribs and orifices to provide handhold members extending from the base member for carrying the apparatus, a horizontally extending gudgeon member extending from the support column substantially parallel above the base member, having a cylindrical shaft journalling cavity above the base member, a cylindrical shaft extending through the cavity with means preventing rotation thereof, manually operable gear means on the gudgeon to position the shaft vertically in the cavity, an upper die set having a plurality of die parts thereon of different profile shapes positioned to receive the rail ends thereinto at various stages of shaping, said die set having support means for vertically moving the dies with the shaft to

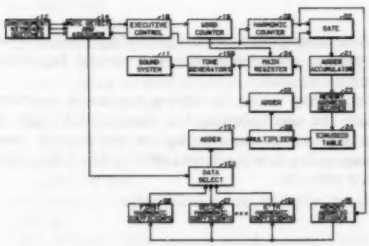
engage a set of mating die parts on said lower die member for performing a series of shaping die cut operations as said rail member with the rail member end positioned at various positions in the mating die parts of the lower die member, said mating die parts on both the lower die support member and the movable shaft being removably secured thereon and said mating die parts secured on said lower die member being shaped with exactly the same profile design as the rail and surrounding the rail for supporting substantially the entire rail profile being processed without play to receive the impact of the mating dies on the movable shaft without deformation of the rail member profile shape and oriented to receive the ends of the rail members thereinto at said various positions.

4,468,996

NOTE GROUP SELECTABLE MUSICAL EFFECTS IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jan. 31, 1983, Ser. No. 462,254
Int. Cl.³ G10H *1/02, 1/06, 7/00*
U.S. Cl. 84—1.01 **15 Claims**



1. In a keyboard musical instrument having a keyboard array of keyswitches arranged in musical octave groups, in which a plurality of data words corresponding to the amplitudes of points defining the waveform of a musical tone for one period are computed during a computation cycle and converted into musical waveshapes, apparatus for generating frequency dependent musical effects comprising:

a keyswitch state detect means wherein a detect signal is generated in response to each actuated keyswitch in said keyboard array of keyswitches

a note range select signal generator responsive to said detect signal wherein a note range signal is generated,

a waveshape memory means,

a means for computing responsive to said note range signal whereby said plurality of data words corresponding to said amplitudes of points defining the waveform of a musical tone for one period are computed and stored in said waveshape memory means during a computation cycle,

a first addressing means for sequentially reading out data words stored in said waveshape memory means, and

a means for producing musical tone from data words read out from said waveshape memory means thereby generating said frequency dependent musical effects.

4,468,997

FRETBOARD TO SYNTHESIZER INTERFACE APPARATUS

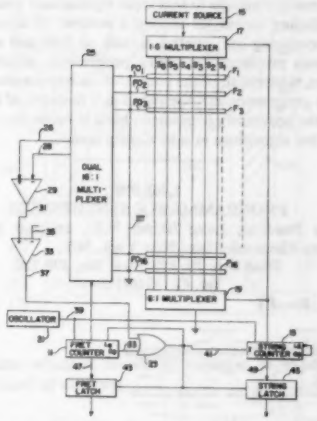
Leroy D. Young, Jr., Miami, Fla., assignor to John Ellis Enterprises, Nashville, Tenn.

Filed Feb. 7, 1983, Ser. No. 464,386
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **6 Claims**

1. Fretboard to synthesizer interface apparatus including a fretboard having a plurality of frets and a plurality of strings stretched thereover comprising:

means for causing a current to flow through each of a succession of said strings;

means for detecting a differential voltage across each of a succession of adjacent fret pairs of said guitar, which



voltage is indicative of a depression of a said string at the fret position bracketed by said fret pair, and for generating a control signal upon said detection; and

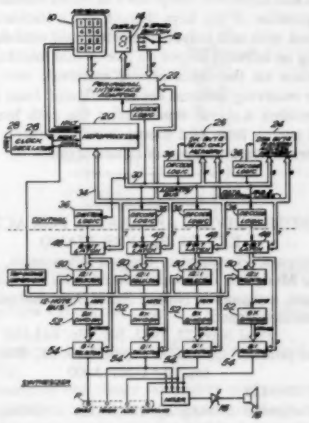
means for maintaining a count indicative of the fret pair under examination by said detecting means and for latching said count in response to said control signal.

4,468,998

HARMONY MACHINE

Denis L. Baggi, Schaffhauserstr. 139, 8057 Zurich, Switzerland

Filed Aug. 25, 1982, Ser. No. 411,427
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **10 Claims**



1. A harmony instrument, comprising:

keyboard means including a number of separately actuable keys each key of which generates an input signal which corresponds to a different musical chord progression

selected by a user, each progression comprising a plurality of chords;

synthesizer means for producing certain ones of a number of different chords in response to control signals; and

control means coupled between said keyboard means and said synthesizer means for computing said control signals and providing said control signals to said synthesizer means in response to said input signals, said control means including means for storing a number of algorithms for determining said control signals so that said synthesizer means produces the chord progression selected by the user, wherein all of the pitches of each successive chord of the progression are computed as a function of the pitches of the previously computed chord in accordance with one of the algorithms in said storing means.

4,468,999

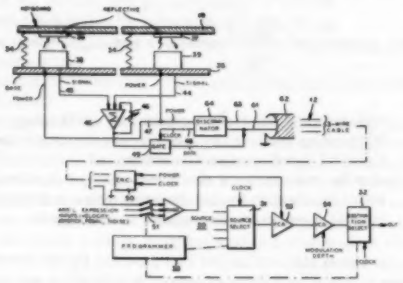
PROGRAMMABLE SYNTHESIZER

Carmine Bonanno, Long Island, N.Y., assignor to Octave-Plateau Electronics Inc., New York, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,716

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.1 **16 Claims**



1. In an electronic music synthesizer having a keyboard and circuitry responsive to said keyboard for generating tones upon the operation of keys thereof, and means for modulating said tones in response to the pressure applied to the keyboard during the operation of the keys thereof, the improvement wherein said keyboard comprises a movable member displaced upon operation of the keys thereof and a stationary member juxtaposed with said movable member, said modulating means including an infrared source on one of said members, a reflective surface on the other of said members, and an infrared detector receiving infrared energy reflected from said surface for outputting a signal representing the path length of said infrared energy from said source to said detector, said modulating means being responsive to said signal.

4,469,000

SOLENOID DRIVING APPARATUS FOR ACTUATING KEY OF PLAYER PIANO

Yuji Fujiwara, Hamamatsu; Shigeru Muramatsu, Mori; Mitsuhiko Mori, and Takamichi Sawase, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 22, 1982, Ser. No. 443,435

Claims priority, application Japan, Nov. 26, 1981, 56-189441

Int. Cl.³ G10F *5/00*

U.S. Cl. 84—115 **9 Claims**

1. A solenoid driving apparatus for actuating keys of a player piano comprising:

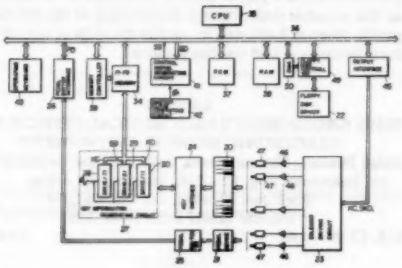
a plurality of keys;

a plurality of solenoids each respectively provided on respective said plurality of keys;

first data generating means for generating a first key striking strength data corresponding to key striking strength of a depressed key;

second data generating means for generating a data designating said depressed key;

first conversion means for converting said first key striking strength data to a second key striking strength data so as to make the latter data in linear proportion to an operating speed of said solenoid;



third data generating means for generating a solenoid driving data in accordance with said second key striking strength data; and

solenoid driving means for driving a solenoid in order to actuate the corresponding key designated by said data from said second data generating means, with energy corresponding to said solenoid driving data being applied to said solenoid.

4,469,001

METHOD OF FORMING A NON-TUNABLE HEAD

Donald R. Hartry, La Canada, Calif., assignor to Remo, Inc., North Hollywood, Calif.

Division of Ser. No. 250,910, Apr. 3, 1980, abandoned. This application Aug. 25, 1982, Ser. No. 411,292

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.³ G10D *13/02*; B29C *25/00*

U.S. Cl. 84—269 **16 Claims**

1. A non-tunable head for a drum, tambourine, banjo, or similar musical instrument which is manufactured by a process comprising: swelling a highly oriented crystalline polymeric film by immersing said film into a liquid solvent bath until said film becomes sufficiently soft soft so that it can be draped, said solvent being a halogenated methane compound; removing said film from said bath; attaching said film to a member having an opening therein before said film dries; drying said attached film by evaporating said solvent, said film shrinking to substantially its original dimensions such that the film is tensioned.

4,469,002

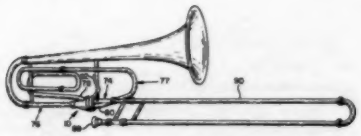
AXIAL FLOW VALVE

Orin E. Thayer, P.O. Box 475, Waldport, Oreg. 97394

Continuation-in-part of Ser. No. 320,000, Nov. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 74,553, Sep. 11, 1979, Pat. No. 4,299,156, which is a continuation-in-part of Ser. No. 927,565, Jul. 24, 1978, Pat. No. 4,213,371, which is a continuation of Ser. No. 764,028, Jan. 31, 1977, Pat. No. 4,112,806. This application May 21, 1982, Ser. No. 380,357

Int. Cl.³ G10D *9/04*

U.S. Cl. 84—390 **23 Claims**



21. A rotary valve for a musical wind instrument having a slide loop, an instrument pipe with a mouthpiece at one end and an instrument pipe terminating in an instrument bell, said valve comprising:

a casing including

(a) a substantially frustoconical casing wall having a base and a narrowed end, said wall tapering directly toward and defining an axial frustrum aperture at said narrowed end and a casing wall aperture at a location between said base and said narrowed end, and

(b) a transverse casing end plate at said base of said wall, said end plate defining primary and secondary end plate apertures; and

a substantially frustoconical rotor rotatable in said casing having

(a) a primary rotor passage which connects said primary end plate aperture to said frustrum aperture when said rotor is in a first position and which connects said secondary end plate aperture with said frustrum aperture when said rotor is rotated to a second position, and

(b) a secondary rotor passage which connects said primary end plate aperture to said wall aperture when said rotor is in said second position,

said primary end plate aperture connecting to one of said instrument pipes,

said frustrum aperture connecting to the other of said instrument pipes,

said secondary end plate aperture connecting to one end of said loop, and

said wall aperture connecting to the other end of said loop.

4,469,003

TUBE CHIMES

Sidney J. Phelps, 2803 W. 34th, Anchorage, Ak. 99503

Filed Sep. 23, 1982, Ser. No. 422,239

Int. Cl.³ G10D *13/08*

U.S. Cl. 84—404 **22 Claims**

22. A chime apparatus for producing tones, the apparatus comprising:

a frame having an upper cross-piece and a lower cross-piece and at least two longitudinal frame pieces therebetween;

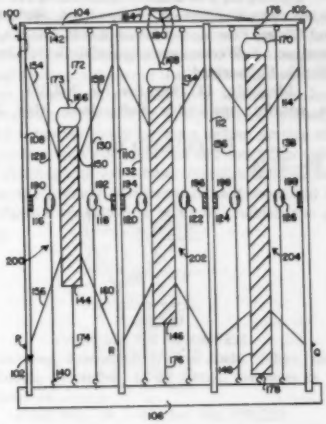
at least one striker element;

elastic means for suspending each striker element between the upper cross-piece and the lower cross-piece;

at least one elongated, longitudinally extending tube; and

means for suspending each tube between the upper cross-piece and the lower cross-piece;

wherein each suspended striker element is laterally adjacent to one tube, wherein each tube and the striker elements adjacent thereto are flanked by two longitudinal frame pieces, and wherein the tubes and the striker elements are coupled to the frame such that the striker element contacts



the tube adjacent thereto in response to a prescribed movement of the frame.

4,469,004

BASS DRUM USED FOR TRAINING PURPOSES

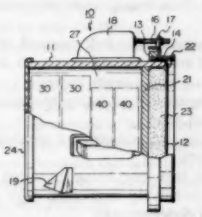
Makoto Kurosaki, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed May 12, 1982, Ser. No. 377,450

Claims priority, application Japan, May 12, 1981, 56-70196; Nov. 27, 1981, 56-175468

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—411 P **5 Claims**



1. An improved bass drum used for training purposes comprising

a long, hollow cylindrical body of a relatively small diameter,

a drum head coupled to one longitudinal end of said cylindrical body,

a flat, transverse end closer secured to the inner surface of said cylindrical body at a position near said one longitudinal end leaving an elongated cylindrical space on the side opposite to said drum head, and

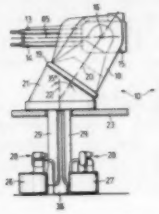
a sound absorbing pad placed in a short space between said end closure and said drum head in surface contact with the inside surface of said drum head.

4,469,005

MARINE FIRING WEAPON FOR FIGHTING AIRBORNE TARGETS, ESPECIALLY IN ZENITH

Jean-Michel Schaulin, Geneva, Switzerland; Robert Gantin, Marival Chens, France, and Yüsar Kanat, Geneva, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührie AG, Zürich, Switzerland

Filed May 11, 1981, Ser. No. 263,035
Claims priority, application Switzerland, May 23, 1980, 4037/80
Int. Cl.³ F41D *10/14*
U.S. Cl. 89—33.14 4 Claims



1. A marine firing weapon for combating airborne targets at a marine vessel, especially in zenith, comprising:

means defining an azimuth alignment axis;

means defining an elevation alignment axis;

means for infeeding belted ammunition to the firing weapon;

said azimuth alignment axis being inclined in relation to a horizontal;

ammunition magazine means arranged below a deck of the marine vessel;

ammunition belt channel means leading from the ammunition magazine means to the firing weapon;

a substantially wedge-shaped socket member secured to the deck of the marine vessel;

means for pivotably mounting the firing weapon about the inclined azimuth axis out of a starting position in two rotational directions through a respective angle which is smaller than 270°;

four weapon barrels of said firing weapon are arranged upon an elevational mount;

each weapon barrel having operatively associated therewith a stationary drum magazine of said ammunition magazine means;

a respective ammunition belt channel of said ammunition belt channel means leading from each drum magazine to a related one of said weapon barrels;

each drum magazine is rotatably mounted about a substantially vertical axis;

each drum magazine possessing a number of sector-shaped compartments;

an ammunition belt loop being arranged in each compartment and operatively connected with a belt loop of the neighboring compartment;

an auxiliary drive arranged above each drum magazine for pulling out the belt loops out of the compartments of the drum magazine;

means provided for each auxiliary drive for continuously rotating the drum magazine about a vertical axis during the removal of the ammunition belt;

a central column member about which there are arranged said four drum magazines;

each of the belt channels being guided along said central column member for each drum magazine;

said central column member defining a vertical column having an upper end containing a bent portion; and

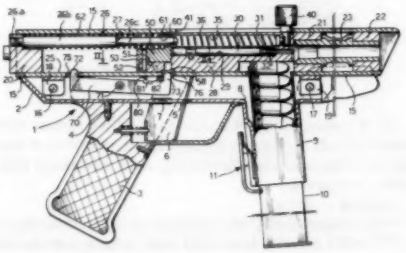
said upper end of said column having a column axis which is arranged substantially coaxially with respect to the azimuth axis of the firing weapon.

4,469,006

AUTOMATIC FIRE-ARM

Roberto Teppa, Turin, Italy, assignor to Sites S.p.A., Mondovi, Italy

Filed Jan. 13, 1982, Ser. No. 339,224
Claims priority, application Italy, May 12, 1981, 67641 A/81
Int. Cl.³ F41D *11/02*
U.S. Cl. 89—149 3 Claims



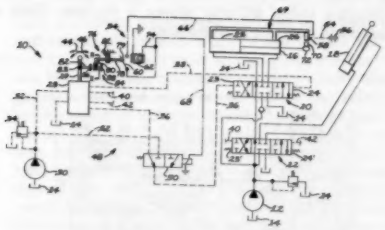
1. An automatic firearm including: a frame; a casing supported by said frame; a barrel fixed to said casing; a chamber defined in said casing adjacent the breech end of said barrel; a bolt movably mounted in said chamber, said bolt being moveable through the effect of the pressure of gasses produced during firing from a forward closing position in which it closes the breech end of said barrel to a withdrawn open position; first resilient means biasing said bolt into said closing position; a firing pin carried by said bolt; hammer block means mounted in said chamber and moveable between a withdrawn arming position and a forward striking position in which it acts on said firing pin; second resilient means biasing said hammer block means into said forward striking position; a trigger and a firing mechanism having a control member acutated by said trigger and operable to allow the movement of said hammer block means from said arming position to said striking position wherein the improvement comprises: a moveable one piece retaining member supported by said frame for movement into and out of said chamber, said retaining member being moveable to a hammer block means retaining position by engagement with said bolt upon movement of said bolt and said hammer block means from the respective forward positions to the respective withdrawn positions wherein said retaining member engages and retains said hammer block means in the withdrawn position and being moveable from said retaining position to a rest position in said chamber solely by engagement with said hammer block means upon forward movement of said hammer block means only when said bolt is in said closing position out of engagement with said retaining member and said control member which is controlled by said trigger and cooperates with said retaining member, said control member moveable between a first position in which it holds said retaining member in said retaining position when said said trigger is released and a second position in which said control member allows movement of said retaining member from said retaining position to said rest position and back when said trigger is pulled.

4,469,007

SINGLE LEVER CONTROL WITH AUTOMATIC VALVE LATCHING

Kurt B. Melocik, Mazon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01545, § 371 Date Nov. 20, 1981, § 102(e) Date Nov. 20, 1981, PCT Pub. No. WO83/01820, PCT Pub. Date May 26, 1983
PCT Filed Nov. 20, 1981, Ser. No. 433,111
Int. Cl.³ F15B *13/08*
U.S. Cl. 91—358 A 18 Claims



1. In a pilot operated system (**10**) having first and second pilot operated control valves (**20,22**) each movable between a neutral position and first and second actuated positions, and a single lever pilot control valve (**28**) movable between a neutral position and a plurality of other positions for controlling the actuation of the first and second pilot operated control valves (**20,22**), the improvement comprising:

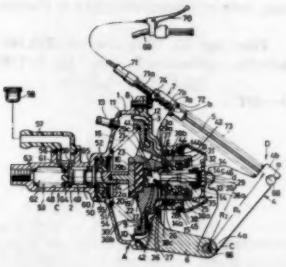
means (**48**) for holding the first pilot operated control valve (**20**) at the first actuated position while freeing the single lever pilot control valve (**28**) to return to the neutral position.

4,469,008

NEGATIVE PRESSURE TYPE BOOSTER ARRANGEMENT

Masayuki Seki, Nagano, Japan, assignor to Nisshin Kogyo Kabushiki Kaisha, Japan

Filed Sep. 23, 1981, Ser. No. 304,937
Claims priority, application Japan, Sep. 30, 1980, 55-136458; Sep. 30, 1980, 55-136459; Sep. 30, 1980, 55-136460; Sep. 30, 1980, 55-139474
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—376 R 5 Claims



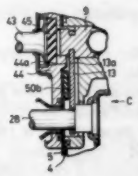
1. A negative pressure type booster arrangement comprising front and rear booster shells, a booster piston disposed therein for reciprocating movement into a constantly negative pressure chamber which is operatively connected to a negative pressure source and a variable pressure chamber which is always put in interchangeable communication with said negative pressure chamber or the air via a control valve mechanism, an input rod which is connected at one end to said booster piston, and is also connected to said control valve mechanism for permitting said booster piston to follow advancement of said input rod due to a difference in air pressure between both said chambers, said one end of said input rod being formed into an enlarged spherical shape so as to abut slidingly and rockingly the inner wall of an axial support slot in said booster piston, said control valve mechanism having a control valve member which, in turn, has a valve head, and a first annular valve seat body having a sliding portion to come in sliding contact with said spherical end and a first valve seat capable of abutting said valve head of said control valve member, so that the rocking movement of said input rod has no adverse influence on said first valve seat which the control valve abuts.

4,469,009

PNEUMATIC BOOSTER

Toshio Takayama, Kanagawa; Hiromi Ando, Tokyo, and Mitsuhiro Endou, Kanagawa, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed May 14, 1982, Ser. No. 378,232
Claims priority, application Japan, May 20, 1981, 56-72835[U]
Int. Cl.³ F15B *9/10*; F01B *19/00*
U.S. Cl. 91—376 R 2 Claims



1. A pneumatic booster comprising:

a housing;

a diaphragm and power piston assembly partitioning the interior of said housing into two chambers, said assembly comprising a flexible diaphragm and a plate-shaped power piston secured to said diaphragm;

a valve body fixed to said assembly;

a plunger slidably received in an axial bore in said valve body;

an input rod having an inner end connected to said plunger;

a poppet valve cooperable with said valve body and said plunger for, upon movement of said plunger in said bore, selectively connecting or disconnecting communication between said two chambers and selectively connecting or disconnecting communication between one of said chambers and a reference pressure;

an output rod connected to said power piston;

a restricting member fitted in an annular groove in the outer circumference of said plunger and axially movable therewith for restricting relative axial movement between said plunger and said power piston and between said plunger and said valve body due to displacement of said plunger toward said power piston and said valve body, respectively; and

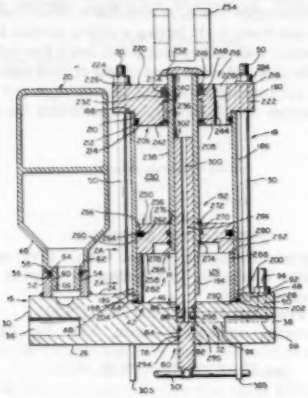
means for preventing sharp impact between said restricting member and said power piston, said preventing means comprising a section of said flexible diaphragm bonded to said plate-shaped power piston, said section including a resilient portion of increased thickness positioned to be abutted by said restricting member upon movement thereof toward said power piston.

4,469,010

MOTION DAMPENING SEAT SUSPENSION SYSTEM

Nick Skover, Jr., Dousman, and Garry J. Sabel, Milwaukee, both of Wis., assignors to Applied Power Inc., Milwaukee, Wis.

Filed Mar. 1, 1982, Ser. No. 353,142
Int. Cl.³ F15B 15/22
U.S. Cl. 91—408 18 Claims



1. A system for resiliently supporting a load at a reference height comprising:

cylinder means for resiliently supporting a load about a reference height;

accumulator means defining a flow path between said cylinder means and said accumulator means whereby hydraulic fluid may flow therebetween in response to varying loads imposed on said cylinder means;

adjustable flow restricting valve means disposed in said flow path for dampening the rate of said fluid flow;

said flow restricting means including check means disposed in said flow path and movable therein between a first position and a second position, said check means defining a first flow area for dampening the flow of fluid through said flow path in a first direction when said check means is in said first position, said check means also defining a second flow area for dampening the flow of fluid through said flow path means in a second direction when said check means is in said second position, the ratio of said first flow area to said second flow area having a predetermined value, said flow restricting means includes adjustment means for varying said first flow area and said second flow area while maintaining approximately said predetermind value, and

adjustable metering valve means coacting with said cylinder means for selecting the reference height about which said load is supported.

4,469,011

PRESSURE CONTROL DEVICE FOR THE ACTUATION OF A CLUTCH OR BRAKE

Alfons Löffler, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 293,989
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031262
Int. Cl.³ F15B 13/043
U.S. Cl. 91—433 3 Claims

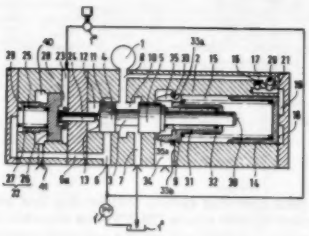
1. A hydraulic control for the delayed pressurization of a hydraulically operated friction brake or clutch forming a speed-changing device for a transmission shiftable under load, said control comprising:

a housing formed with a bore;

a spool slider shiftable in said bore and having two spools, said housing being provided with a fluid pressure port, a vent port and a port connectable to said device, one of said spools selectively controlling communication between said pressure port and said port connectable to said device, the other of said spools selectively connecting the latter port to said vent port;

means in said housing for applying fluid pressure of said device to said slider in one direction;

means forming a damping chamber in said housing receiving a damping piston shiftable against a yieldable force to expand and contract said chamber;



a passage formed in said chamber communicating between said port connectable to said device and communicating via a throttle and a check valve in parallel to said throttle with said chamber;

a cup-shaped member in said housing forming a sleeve surrounding said slider, means being provided to secure said cup-shaped member to said housing in said one direction;

at least one spring in said sleeve braced against said sleeve and bearing upon said slider for biasing said slider in a direction opposite said one direction; and

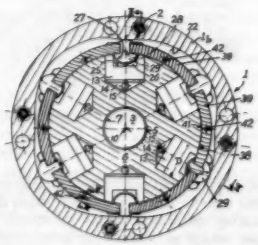
an outer spring surrounding said sleeve and seated thereon, said outer spring bearing upon said damping piston and biasing same in a direction tending to contract said chamber, said sleeve being formed with a ring engaging said housing.

4,469,012

PRESSURIZED FLUID MECHANISM COMPRISING REACTION ROLLERS MOUNTED ON PISTONS

Louis B. Bigo, Compiegne, and Patrick E. Ramousse, Lacroix-Saint-Ouen, both of France, assignors to Poclain Hydraulics, France

Filed Apr. 22, 1982, Ser. No. 370,745
Claims priority, application France, May 4, 1981, 81 08786
Int. Cl.³ F04B 1/3/06
U.S. Cl. 91—491 5 Claims



1. A pressurized fluid mechanism comprising:

a body supporting at least one cam;

a cylinder block mounted on said body for rotation about an axis of rotation with respect to said body;

a plurality of cylinders disposed within said cylinder block radially with respect to said axis of rotation of said cylinder block;

a plurality of pistons each mounted within a respective one of said cylinders for movement relative to the respective cylinder in a direction radially in respect to said axis of rotation;

cylindrical rollers respectively mounted upon said pistons and engageable with said at least one cam, said rollers having axes parallel to said axis of rotation of the cylinder block, each of said pistons having a transverse bore, and each cylindrical roller being disposed in at least part of said bore in the respective one of said pistons; and

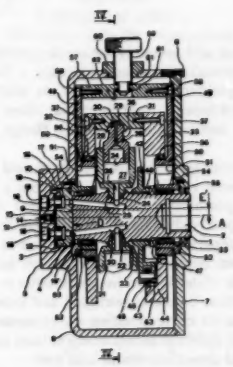
means for holding each roller in axial position in the respective bore including abutments on said cylinder block engageable with end edges of said rollers, two coaxial projecting members on opposite sides of each of said rollers and moving radially with the respective one of said pistons, said abutments having interruptions extending at least partially therethrough in the radial direction and aligned with paths of radial movements of said projecting members with the respective pistons for permitting said radial motion of said pistons, said abutments being constituted by a single split ring on at least one side of a transverse plane containing the axes of several of said cylinders, said single split ring defining an opening between its ends and being elastically deformable by urging said ends apart so as to fit around said cylinder block, and indentations in said ring to coincide with said radial interruptions provided for the clearance of said projecting members of at least a plurality of said rollers.

4,469,013

RADIAL-PISTON HYDRAULIC MOTOR

Franco Poppi, Modena, Italy, assignor to Oliostip S.p.A., Modena, Italy

Filed Apr. 7, 1982, Ser. No. 366,156
Claims priority, application Italy, Apr. 8, 1981, 40038 A/81
Int. Cl.³ F01B *13/06*; F04B *1/28, 1/14*
U.S. Cl. 91—495 **5 Claims**



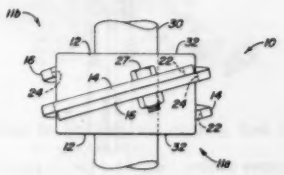
1. A radial-piston hydraulic motor, comprising: casing means including hydraulic distributor means stationarily arranged therein; a series of radial cylinders connected on one side thereof to a central shaft and on the other side thereof to piston means disposed in said cylinders, said shaft having peripherally disposed bosses thereon surrounding a ballsocket adapted to mate with a ball-appendage forming part of each radial cylinder, each appendage having a fluid-supply aperture communicating with each cylinder; said piston means being a hollow piston disposed within each cylinder, each piston including a ball appendage formed with a lubricant aperture; a piston-support traverse formed with a ball socket respectively receiving the ball appendage of each piston; a pair of discs connected together by the piston support traverse, each disc having an inner cylindrical surface respectively coupled in rotation with an outer cylindrical surface of a means rotatably coupled to said shaft for imparting eccentric movement to the discs relative to the shaft; each cylinder having a fluid supply aperture communicating through a radially-disposed aperture within the shaft with a longitudinal duct formed in the shaft, the longitudinal duct communicating with an arched channel (19') in a distributor body and means for resiliently maintaining a forward face of the distributor body in contact with an end of the shaft opposite an output end thereof.

4,469,014

CYLINDER SPACER

Roger J. Nelson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 13, 1983, Ser. No. 504,004
Int. Cl.³ F15B *15/24*
U.S. Cl. 92—13 **1 Claim**



1. A cylinder stroke limiting collar comprising:

(a) a pair of complimentary mating cam members, each cam member comprising:

(1) a cylindrical body having a rod-receiving opening extending therein from a central portion of the body out to an outer peripheral surface thereof; and

(2) a pair of curved ramps extending radially outwardly from the body, said ramps being inclined with respect to an axis of the body, each ramp defining a generally axially facing and inclined cam surface for engagement with a complimentary cam surface of the mating cam member, axial thickness adjustment of the collar being produced by relative rotation of the complimentary cam surfaces, and each ramp having an arcuately extending fastener-receiving slot therein, said slot having a radially inner edge spaced radially outwardly from the outer peripheral surface of the body; and

(b) fastening means extending through the slots for fastening the mating cam members together.

4,469,015

EMERGENCY AND SERVICE BRAKE ACTUATOR

James R. Clark, Milford, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 13, 1983, Ser. No. 457,825
Int. Cl.³ F01B *7/20*; F15B *21/02*; F16J *1/10*
U.S. Cl. 92—63 **5 Claims**

1. An improved emergency and service brake actuator for a wedge type brake of the type which includes a tubular structure connected to and extending from a housing of said brake to include an extended end of a stem of said wedge of said brake therein, an emergency brake actuation means mounted on said tubular structure and including an emergency actuation rod extending into said tubular structure, said emergency brake actuation means being capable of producing axial movement of said emergency actuation rod to cause an end thereof within an interior of said tubular structure to be selectively located at one of a first position toward said brake for emergency actuation of

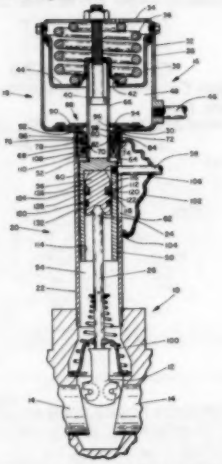
said brake and a second position remote from said brake, and means for controlling said service brake actuator with service hydraulic fluid from a service brake actuation system, wherein said improvement comprises:

a service cylinder mounted on one of said end of said emergency actuation rod and said extended end of said stem;

said service cylinder being mounted within said interior of said tubular structure and capable of axial movement therein;

a service piston mounted on the other of said end of said emergency actuation rod and said extended end of said stem;

said service piston being mounted for sealed movement within said service cylinder;



means for coupling said service cylinder to said service brake actuation system for selective introduction of said service hydraulic fluid to and discharge of said service hydraulic fluid from an interior of said service cylinder to act on a pressure end of said service piston to produce relative movement therebetween when said emergency actuation rod is in said second position;

said tubular structure including an axially extending elongated slot in a side thereof; and

said means for coupling said service cylinder to said service brake actuation system including a hydraulic line extending from said service cylinder through said slot to allow said axial movement of said service cylinder within said interior of said tubular structure.

4,469,016

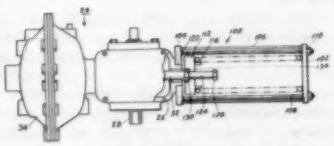
SPRING SAFETY DEVICE

Ronald G. Butler, Lancaster, and John R. Lehman, Columbia, both of Pa., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,625

Int. Cl.³ F01B *29/00, 31/00*

U.S. Cl. 92—128 **9 Claims**



1. A self contained spring biasing device for use with a power shaft having a longitudinal axis and mounted in a support structure for reciprocating movement along the shaft axis, the spring biasing device comprising:

spring cartridge means including an attachment member for removably securing said spring cartridge means to the support structure, a rear bearing member secured to and spaced from said attachment member, a front bearing member disposed between said attachment member and said rear bearing member, said attachment member having an opening therein for passage of the shaft into said spring cartridge means, said front bearing member being larger than said opening, and a compression spring disposed between said front bearing member and said rear bearing member for providing a movement resisting force on the shaft and for resisting movement of said front bearing member by the shaft toward said rear bearing member; and

safety means enabling the shaft to be secured to said front bearing member, said safety means being accessible from the exterior of said spring cartridge means for removably securing said front bearing member to the shaft to prevent disassembly of said spring cartridge means from the shaft.

4,469,017

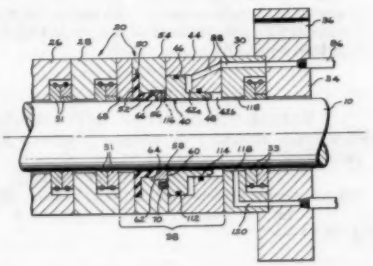
STATIC LEAK SEAL ASSEMBLY FOR USE IN FLUID CONTAINING MACHINERY

Paul C. Hanlon, Louisville, Ky., assignor to Dover Corporation, Louisville, Ky.

Filed Feb. 23, 1983, Ser. No. 468,981

Int. Cl.³ F16J *15/18*

U.S. Cl. 92—168 **12 Claims**



1. A static leak seal assembly for use in a machine of the type which conventionally includes a cylinder, a fluid under pressure in said cylinder, a rod movable in said fluid, packing means for maintaining a fluid tight seal about said rod when said rod is in motion, and a packing flange, said assembly comprising

piston means separate and distinct from said flange adapted for movement relative to said rod from a retracted to an extended position when the movement of said rod has been stopped and from said extended to said retracted position preparatory to setting said rod in motion;

follower means separate and distinct from said piston means adapted for slidable movement relative to said rod in an axial direction between retracted and extended positions in response to corresponding movements of said piston means, said follower means being at least slightly movable in all radial directions about said rod;

fluid sealing means constructed of a flexible, resilient material and adapted for mounting around said rod next to said follower means, said sealing means being compressible inwardly against said rod to form a substantially fluid tight seal therearound, said follower means being adapted to compress said sealing means to form said seal when placed in its extended position;

biasing means for maintaining said piston means in its retracted position when said rod is in motion;

means for driving said piston means to its extended position in opposition to said biasing means when said rod becomes motionless; and

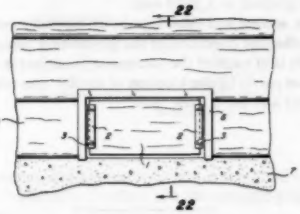
means for deactivating said driving means to permit said biasing means to return said piston means to its retracted position to relieve the compressive force of said follower means from said sealing means to break said seal preparatory to setting said rod in motion.

4,469,018

ENERGY-SAVING CLOSURE FOR FOUNDATION VENTS

Noel W. Taulman, 5023 S. 33rd W. Ave., Tulsa, Okla. 74107

Filed Feb. 19, 1982, Ser. No. 350,408
Int. Cl.³ F24F 7/00
U.S. Cl. 98—37 **2 Claims**



1. In a residential, commercial, or industrial building of the type clad with a plurality of elongated sheathing elements defining siding and including air vent openings in said siding, a portable device for closing said openings comprising:

(a) a generally rectangular segment of siding matching the existing siding,

(b) a layer of insulation covering one side of said siding segment,

(c) a mounting flange fixed to one margin of said segment,

(d) a pair of opposed adjustable mounting flanges connected to second and third margins of said segment, and

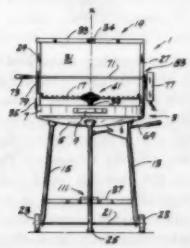
(e) locking tabs rotatably mounted on said opposed margins for securing said siding segment in place.

4,469,019

BARBECUE GRILL

Helen W. Baer, 2043 Briarcliffe Dr., Springfield, Ill. 62704

Filed Apr. 21, 1983, Ser. No. 487,161
Int. Cl.³ A47J 37/04
U.S. Cl. 99—339 **16 Claims**



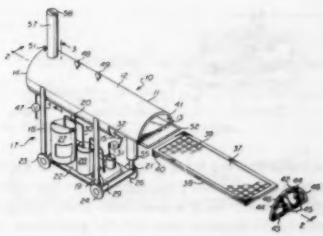
1. A barbecue grill comprising a fire bowl for holding charcoal and the like, legs for supporting the fire bowl above the ground, a cooking grill above the fire bowl rotatable about a generally vertical axis, a single rod having a length greater than the diameter of the cooking grill selectively mountable in a generally horizontal position for use as a spit and in a generally vertical position for use in rotating the cooking grill on said vertical axis, a motor for turning the rod on its longitudinal axis, a first motor mount for removably mounting the motor in a position in which it is adapted to turn the rod when the latter is in its horizontal position, a second motor mount for removably mounting the motor in a position in which it is adapted to turn the rod when the latter is in its vertical position, and means for interconnecting the rod and cooking grill when the rod is in its vertical position whereby operation of the motor to turn the rod effects conjoint rotation of the cooking grill.

4,469,020

PRESSURE COOKING AND SMOKING APPARATUS

Daniel B. Hamilton, 430 Parker Loop, Dayton, Tex. 77535, and James H. Hughes, Jr., 5011 Briar Grove, Liberty, Tex. 77575

Filed Jun. 28, 1982, Ser. No. 392,654
Int. Cl.³ A47J 37/04
U.S. Cl. 99—352 **20 Claims**



1. An apparatus for cooking and smoking food products comprising;

an enclosed vessel having a pressure sealable opening,

a removable pressure sealable door for said opening,

heating means for said vessel comprising a radiant heat tube positioned in and extending outside of said vessel for receiving a heating fluid,

smoke producing means external to said vessel and separate from said heating means, and

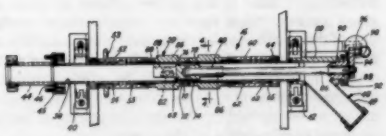
means for supplying smoke under pressure from said smoke producing means to said vessel.

4,469,021

DUAL FEED STENCIL ASSEMBLY FOR A SANDWICHING MACHINE

Edward Rose, Skokie, and David E. Weber, Chicago, both of Ill., assignors to Peters Machinery Company, Chicago, Ill.

Filed Dec. 17, 1982, Ser. No. 450,527
Int. Cl.³ A21C 9/04; B29F 3/01, 3/04
U.S. Cl. 99—450.4 **11 Claims**



1. In a sandwiching machine for use in applying creme to at least two laterally spaced rows of cookies traveling along said sandwiching machine, said sandwiching machine including stencil means for applying creme to the cookies in a uniform manner, said stencil means comprising a stencil sleeve and a stencil rotatable thereon, said stencil having spaced apart discharge orifices and said stencil sleeve having inlets at each side of the discharge orifices, said stencil sleeve having at least two longitudinally spaced ports aligned with the discharge orifices in said stencil, valve means within the stencil sleeve for controlling the flow of creme through the discharge orifices, said valve means comprising a generally cylindrical valve body having segments extending generally axially therefrom and

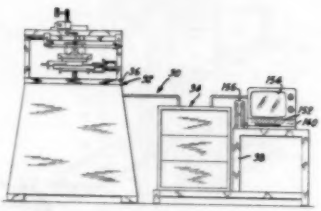
cooperating with the longitudinally spaced ports to control the flow of creme, the construction precluding mixing of creme supplied to the separate stencil sleeve inlets, and creme hopper means communicating with the stencil means for supplying creme to each of the stencil sleeve inlets.

4,469,022

APPARATUS AND METHOD FOR DECORATING ARTICLES OF NON-CIRCULAR CROSS-SECTION

Neil A. Meador, Montvale, N.J., assignor to Permanent Label Corporation, Clifton, N.J.

Filed Apr. 1, 1983, Ser. No. 481,308
Int. Cl.³ B41F *17/08*
U.S. Cl. 101—38 R **16 Claims**



1. Apparatus for decorating the surface of an article having a non-circular cross-sectional configuration, the apparatus including an applicator having a surface for applying a decorating medium to the article surface at a given location in the apparatus, at which given location the applicator surface and the article surface are maintained in proper relative position and appropriate relative velocity for the application of the decorating medium throughout a decorating cycle of operation, the apparatus comprising:

positioning means for positioning the article and the applicator at successive positions relative to one another during the decorating cycle such that successive portions of the article surface will be placed in the proper relative position and at the appropriate relative velocity with corresponding successive portions of the applicator surface, at the given location, throughout the decorating cycle, the positioning means including article drive means for advancing the successive portions of the article surface through the given location, and applicator drive means for advancing successive portions of the applicator surface through the given location, during the decorating cycle;

detecting means for detecting the successive positions of the article at which the successive portions of the article surface are placed in the proper relative position at the given location, based upon the cross-sectional configuration of the article, and for determining the condition of the positioning means when the article is at each of said successive positions so as to provide article-configuration information pertaining to the condition of the positioning means as determined by the surface contour of the cross-sectional configuration of the article;

information processing means for receiving said article-configuration information from the detecting means, and for providing operating information for actuation of the positioning means; and

actuating means for actuating the positioning means in accordance with the operating information provided by the information processing means to actuate the article drive means and the applicator drive means such that the proper relative position and the appropriate relative velocity are maintained between the article surface and the applicator surface, at the given location, throughout the decorating cycle;

the article drive means including

rotating means for rotating the article about a longitudinal first axis, relative to a corresponding home position; and

translating means for translating the first axis laterally in directions perpendicular to the first axis, relative to a further corresponding home position; such that

the condition of the positioning means when the article is at each of the successive positions is determined at least partly by the angular position of the article about the first axis and the location of the first axis, relative to the corresponding home positions; and

the translating means including

first moving means for moving the first axis along directions parallel to a second axis; and

second moving means for moving the first axis along directions parallel to a third axis;

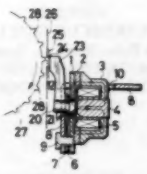
the first, second and third axes being mutually perpendicular such that the condition of the positioning means when the article is at each of the successive positions is determined at least partly by the location of the first axis relative to the second and third axes.

4,469,023

CROSS HAMMER TYPE PRINTER HEAD

Mikio Hayashi, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,905
Claims priority, application Japan, May 20, 1981, 56-76025
Int. Cl.³ B41J *9/02*
U.S. Cl. 101—93.48 **5 Claims**



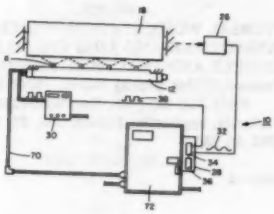
1. A printer head comprising: a resiliently flexible arm having distal and proximal ends; means mounting the proximal end of the arm to enable resilient flexing movement of the arm in forward and reverse directions accompanied by movement of the distal end of the arm; a movable magnetic yoke carried by the distal end of the arm for movement therewith; a printing hammer secured to the movable yoke and movable between printing and non-printing positions in response to flexing movement of the arm; magnetic means coacting with the yoke for magnetically attracting the yoke to thereby effect resilient flexing of the arm in the reverse direction to move the printing hammer to the non-printing position; electromagnetic means for selectively cancelling the magnetic attraction of the yoke to enable resilient flexing of the arm in the forward direction to thereby move the printing hammer to the printing position; and a restraining plate member progressively engageable with the front surface of the arm along the length thereof during flexing movement of the arm in the forward direction for restraining the forward movement of the arm in a progressively increasing manner to thereby prevent unwanted stressing of the arm during forward movement thereof.

4,469,024

FLUID DISPENSING APPARATUS SUCH AS SPRAY DAMPENER FOR PRINTING PRESS AND METHOD OF DISPENSING

Michael A. Schwartz, and Toshio Yamagata, both of Batavia, Ill., assignors to Press Machinery Corporation, Bensenville, Ill.

Filed Oct. 18, 1982, Ser. No. 434,875
Int. Cl.³ B41F *7/24*
U.S. Cl. 101—147 **2 Claims**



1. Fluid dispensing apparatus for dispensing fluid with a fluid pressure to a plurality of rollers of a lithographic printing press comprising:

electromechanical means operatively connected to the printing press for sensing a speed of the printing press, and for generating an electrical signal related to the printing press speed;

a plurality of spray bars mounted singly in operative proximity to each of the plurality of rollers;

a plurality of nozzles each having an orifice, mounted in spaced relation along each of the spray bars, and adapted to spray the fluid toward and on each of the plurality of rollers;

a plurality of mechanical shut off valves each controlling a nozzle, and mounted on the spray bars, each nozzle and controlling valve being operable in a first state of operation for spraying the fluid and a second state of operation being a non-spraying state of shutting off the fluid;

an electronic, programmable controller means for receiving the electrical signal related to printing press speed, and for generating an electrical, pulsed control signal consisting of first control signal segments having a first control signal value and a time interval A interrupted by second control signal segments having a second control signal value and a time interval B, the pulsed control signal varying in relation to the frequency of the electrical signal related to printing press speed, the programmable controller being electrically, operatively connected to the electromechanical sensing means;

a plurality of electromechanical unit controller means each for receiving the electrical, pulsed control signal and for generating an output signal to one of the controlling valves, the output signal consisting of first output signal segments having a first output signal value and the time interval A interrupted by the second output signal segments having a second output signal value and the time interval B, the output signal corresponding in a one-to-one relationship with the pulsed control signal and thereby varying in relation to the frequency of the electrical signal related to press speed, the unit controllers each being electrically, operatively connected to the programmable controller and mechanically, operatively connected to one of the controlling valves;

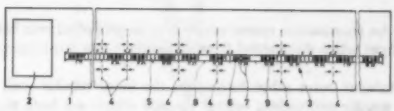
each nozzle and controlling valves operating in said first state of operation during time intervals A of the first output signal segments, operating in the second state of operation during time intervals B of the second output signal segments, and switching between the first and second states of operation at the ends of the time intervals A and B, the nozzles thereby producing spray varying in relation to the frequency of the electrical signal related to press speed.

4,469,025

DEVICE FOR FILM-MOUNTING PRINT CONTROL STRIPS AT A PRECISE LEVEL AND IN REGISTRY

Gerhard Löffler, and Franz Arendt, both of Walldorf, Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen, Heidelberg, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,242
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219744
Int. Cl.³ B41F *33/00*; G01J *3/46*
U.S. Cl. 101—171 **10 Claims**



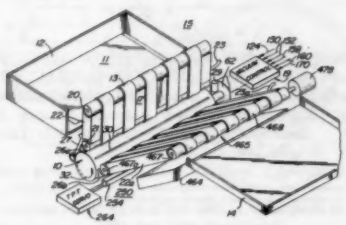
1. Device for film-mounting print control strips at a precise level and in registry comprising a foil forming a template for a mounting foil when mounting a print control strip, said foil template containing ink and measureing-field information necessary for film mounting at a precise level and in registry, and further containing a characteristic of printing plate centers.

4,469,026

METHOD AND APPARATUS FOR CONTROLLING DRYING AND DETACHING OF PRINTED MATERIAL

John W. Irwin, Loveland, Colo., assignor to IBM Corporation, Boulder, Colo.

Continuation of Ser. No. 077,480, Jul. 20, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 330,866
Int. Cl.³ B41J *3/04, 5/44, 13/08*
U.S. Cl. 101—426 **25 Claims**



1. A printing system comprising

storage means for providing electronic signals representative of print information to be printed,

an ink jet printer having means for converting said electronic signals into print for printing a copy,

means for determining from the electronic signals the density of print data for each individual copy as a measure of the wetness of the copy itself, said determining means providing the determination of print data density from the electronic signals for each individual copy substantially simultaneously with said ink jet printer converting said electronic signals into print for that individual copy,

means for transporting each copy during printing, and

means for controlling the detaching of each individual copy from the transporting means in accordance with the density of print data of that individual copy.

4,469,027

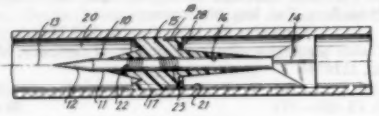
ARMOR PIERCING AMMUNITION HAVING INTERLOCKING MEANS

Bruce Burns, Churchville, and William Donovan, Aberdeen, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 15, 1983, Ser. No. 485,344

Int. Cl.³ F42B 13/16

U.S. Cl. 102—521 6 Claims



1. An ammunition round adapted to be propelled into ballistic flight when discharged from an artillery gun bore comprising:

a tubular outer sabot having on the inner tubular wall inwardly protruding helical threads which are both right-handed threads and left-handed threads;

an elongated projectile removably interlocked into said sabot during said discharge and adapted to be separated therefrom during said flight, the projectile having on its exterior wall outwardly protruding helical threads which are both right-handed threads and left-handed threads, which threads are removably intermeshed with the said respective right and left threads on the sabot.

4,469,028

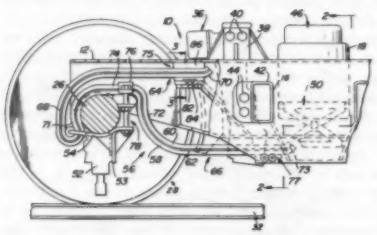
PRIMARY SUSPENSION SYSTEM FOR A RAILWAY CAR WITH VERTICAL AND LONGITUDINAL COMPLIANCE

Walter C. Dean, II, Collegeville, Pa., assignor to The Budd Company, Troy, Mich.

Filed Dec. 28, 1981, Ser. No. 335,249

Int. Cl.³ B61F 5/06, 5/30, 15/02

U.S. Cl. 105—224 R 5 Claims



1. A primary suspension system to provide vertical and longitudinal compliance for a railway car having a journal bearing for supporting a wheel-axle assembly and a side frame comprising:

(a) a pair of elongated leaf springs each connected at one end to the top portion of said side frame and each connected at its opposite end to the bottom portion of said side frame;

(b) an elongated liner element disposed between said pair of springs to provide damping;

(c) said leaf springs comprising a plurality of horizontal and curved vertical portions on both sides of said journal bearing;

(d) said horizontal portions providing said horizontal compliance with the horizontal spring rate being determined by the length of said horizontal portions;

(e) said curved vertical portions on both sides of said journal bearing providing said longitudinal compliance with the longitudinal spring rate being determined by said curved vertical portions, and

(f) said leaf springs being disposed on the top portion only of said journal bearing.

4,469,029

UNIVERSAL WORK STATION, WHICH CAN BE TRANSFORMED AND ADAPTED, ALLOWING MULTIPLE AND PRACTICAL SPECIFIC USES

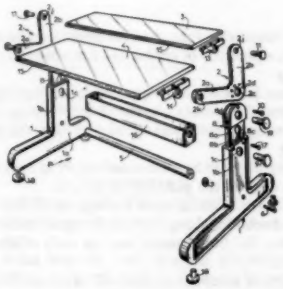
Marcel Ramond, 159bis quai de Valmy, 75010 Paris, France

Filed Jan. 25, 1982, Ser. No. 342,495

Claims priority, application France, Jan. 27, 1981, 81 01913; Dec. 8, 1981, 81 23323

Int. Cl.³ A47F 5/12

U.S. Cl. 108—3 13 Claims



1. A transformable universal work station comprising:

support legs with support base and uprights;

four independent pivoting arms forming two pairs of pivoting elbows;

means for locking each said pair of arms to each other at a fixed angle at one end of each said arm;

means for mounting said elbows on said support legs;

two work tops; and

means for mounting said work tops at the second ends of said arms, including means for independently setting and locking the angles of said work tops to said arms.

4,469,030

STRUCTURAL JOINTS

Ernest E. Hopwell, Warwickshire, England, assignor to Linvar Limited, Leicester, England

Filed Sep. 29, 1980, Ser. No. 191,772

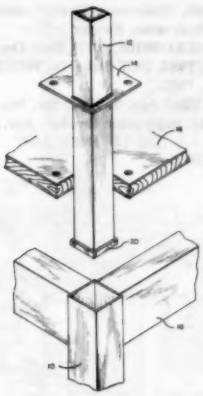
Claims priority, application United Kingdom, Oct. 12, 1979, 7935571

Int. Cl.³ A47B 41/04; A47F 5/14

U.S. Cl. 108—28 1 Claim

1. A work bench comprising a main frame at least two tubular metal legs secured to the main frame, a tubular frame member longitudinally slidable in each of the said legs, a flange secured to each said tubular frame member, a work top secured to the said flanges, the flanges and the work top determining the longitudinal positions of each of the said tubular frame

members in the said legs, and a locating member secured to an end of each said tubular frame member and slidably fitting



inside the corresponding leg for locating the said tubular frame member laterally in relation thereto.

4,469,031

SUPPORT ASSEMBLY

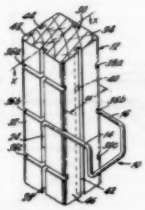
Ivan J. Haycock, St. Albans, England, assignor to Leida Systems Limited, Bedfordshire, England

Filed Feb. 26, 1982, Ser. No. 353,005

Claims priority, application United Kingdom, Jan. 19, 1981, 8201392; Feb. 27, 1981, 8106382

Int. Cl.³ A47B 9/00

U.S. Cl. 108—144 34 Claims



1. A support assembly comprising an elongate member, the elongate member having at least one pair of opposed longitudinal facets, a longitudinal channel extending along at least one of said pair of facets of the elongate member and one or more transverse channels extending across that facet and intersecting the longitudinal channel, and a bracket, the bracket comprising an angled portion engageable in the longitudinal channel and the or any one of the transverse channels at an intersection, a further portion engageable with the other facet of said pair and a bridging portion joining the angled portion and the further portion to hold the angled portion in engagement with the longitudinal channel and that transverse channel, the bridging portion being spaced from the elongate member so that other members can be supported on the bridging portion and held between the bridging portion and the elongate member.

4,469,032

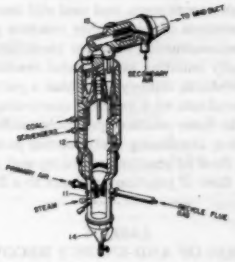
ZONE COMBUSTION OF HIGH SULFUR COAL TO REDUCE SO_x EMISSION

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 16, 1982, Ser. No. 419,106

Int. Cl.³ F23B 7/00

U.S. Cl. 110—342 12 Claims



1. The method of reducing SO_x emission in the combustion of coal which contains sulfur compounds comprising:

combusting coal and char in an oxidizing atmosphere at high temperature;

pyrolizing said coal in a reducing atmosphere to form said char and to convert said sulfur compounds to combustible gas including H_2S;

restricting the flow of air to said coal during combusting to minimize the excess oxygen present during the step of pyrolizing;

adding steam during the step of combusting to produce hydrogen;

supplying said hydrogen to said pyrolizing step;

adding a basic mineral scavenger during pyrolizing;

reacting said H_2S with a basic mineral in said coal, said scavenger and said char to produce ash containing sulfur; and

removing said ash containing sulfur from the combustion process.

4,469,033

METHOD OF MINIMIZING THE EMISSION OF CONTAMINANTS FROM COMBUSTION PLANTS

Sigfrid Michelfelder, and Helmut Voos, both of Gummersbach, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

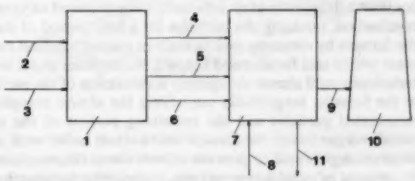
Filed Feb. 17, 1982, Ser. No. 349,579

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106526

The portion of the term of this patent subsequent to Jul. 24, 2001, has been disclaimed.

Int. Cl.³ F23J 1/00

U.S. Cl. 110—344 11 Claims



1. A method of treating reaction products which result from the combustion of fuel which contains contaminants, said method comprising the steps of:

subjecting said fuel to combustion in a combustion chamber to form reaction products which contain gaseous contaminants;

then adding additives to said combustion chamber for reaction therein with the gaseous contaminants of the reaction products to form remaining reactive additives, reactive ash constituents, and further reaction products which contain still uncombined gaseous contaminants;

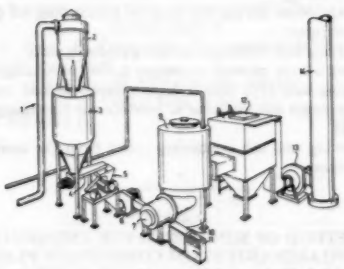
subsequently reacting said remaining reactive additives, said reactive ash constituents, and said still uncombined gaseous contaminants of said further reaction products externally of the combustion chamber via external reactions at least partially initiating said external reactions to produce reaction products; conveying at least a partial flow of said reaction products to a reactor; continuing said external reactions to form reaction products; adding supplementary additive; combining said reaction products with the remaining flow of reaction products; and conveying said combined flow of reaction products to a flue.

4,469,034

INCINERATION OF AND ENERGY RECOVERY FROM RELATIVELY INCOMBUSTIBLE WASTE, ESPECIALLY RUBBER AND PLASTIC

T. Lennart Eriksson, Vargön; Ebert Andersson, Trollhättan, and Olle Nyström, Höganäs, all of Sweden, assignors to Volvo Flygmotor AB, Sweden

Continuation-in-part of Ser. No. 226,683, Jan. 21, 1981, abandoned. This application Mar. 24, 1983, Ser. No. 478,446
Claims priority, application Sweden, Jan. 28, 1980, 80006497
Int. Cl.³ F23G *5/06*
U.S. Cl. 110—346 **7 Claims**



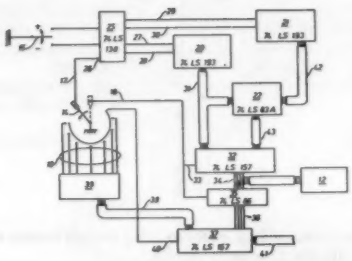
1. A method of incinerating relatively incombustible, slow burning rubber and plastic wastes comprising the steps of finely dividing the waste into small particles in a grinder, mixing the particles with air into a suspension, blowing the suspension into a cyclone-type furnace, introducing additional oxygen sufficient to provide an excess of about 1 to 7% of the stoichiometric amount of oxygen for combustion into the furnace, dividing the additional oxygen such that a portion thereof mixes with the suspension and the resulting mixture contains a deficiency of stoichiometrically required oxygen for combustion, retaining the particles for a long period of stay in the furnace by directing said mixture to assume a helical movement within said furnace and keeping the particles under heavy turbulence until almost completely incineration of the particles in the furnace, tangentially conveying the almost completely incinerated particles and the remaining portion of the additional oxygen out of the furnace into a steam boiler with sufficient mixing thereof to provide at least about the stoichiometric amount of combustion oxygen, completing incineration of the particles in the boiler removing heat from the incineration mixture in the boiler and generating steam using the heat removed, conveying the flue gases out of the boiler and purifying the flue gases in a cyclone purifier.

4,469,035

ARRANGEMENT IN AN ELECTRONIC SEWING MACHINE

Bengt A. Bergvall, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden

PCT No. PCT/SE82/00105, § 371 Date Dec. 20, 1982, § 102(e) Date Dec. 20, 1982, PCT Pub. No. WO82/03878, PCT Pub. Date Nov. 11, 1982
PCT Filed Apr. 5, 1982, Ser. No. 453,887
Claims priority, application Sweden, Apr. 30, 1981, 8102757
Int. Cl.³ D05B *3/06*
U.S. Cl. 112—158 B **7 Claims**



1. In an arrangement of an electronic machine with a needle bar mechanism and a cloth feeder and a memory unit for the generation of stitch code for the control of the zigzag motions of the needle and the feeding movements of the feeder in order to produce fancy seams, the improvement wherein the memory unit comprises two programmable electronic memories for the stitch length, adjustable by means of a manually operated switch, a first one of these memories is connected to said switch when a manually operated switching means is positioned to enable the sewing of a first portion of the fancy seam and the second memory is connected to the said switch when said switching means is positioned to enable the sewing of a second portion of the fancy seam, and that the two memories are adapted, separately or in combination, for storing and supplying of data for each of said portions during the repetition of sewing of said fancy seam.

4,469,036

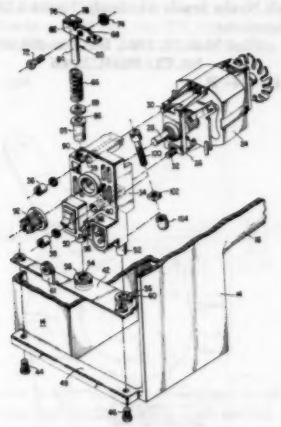
ELECTRICALLY ISOLATING SEWING MACHINE MOTOR MOUNT

Albert N. Cook, Madison, and Louis F. Daman, Warren Township, Somerset County, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 4, 1982, Ser. No. 432,510
Int. Cl.³ D05B *69/12*
U.S. Cl. 112—220 **6 Claims**

1. In a sewing machine with a metallic frame including a base and an upstanding standard; a drive shaft pulley, an electrically non-conductive housing slidably mounted for up-down translatory motion on the frame, an electric motor affixed at only one end on the housing and with the motor shaft extending through the housing to a location beyond the housing where the shaft carries a belt driving element in the plane of

the drive shaft pulley, a belt operatively connecting said driving element on the motor shaft with the drive shaft pulley, and



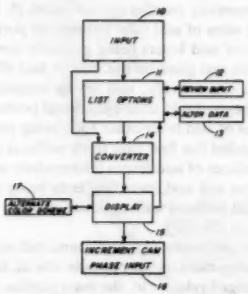
a compression spring on the machine arranged to exert a downward force on the housing and tighten the belt.

4,469,037

METHOD OF PRODUCING FOR REVIEW A TUFTED FABRIC PATTERN

Ralph H. Bost, Jr., Columbia, S.C., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 23, 1982, Ser. No. 371,382
Int. Cl.[3] D05C *15/04*
U.S. Cl. 112—266.2 4 Claims



1. A method of producing for review a tufted fabric pattern prior to actually tufting the fabric with a tufting device comprising at least two needle bars, comprising the steps of:

a. converting the tufting parameters of: a cam pattern for each of the needle bars, a cam phase, a creel pattern for each of the needle bars, and a creel phase, into a plurality of digital patterns;

b. converting the digital patterns into a plurality of video signals; and

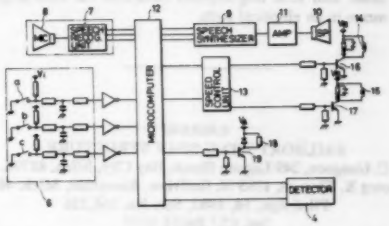
c. displaying the resultant graphics on a cathode-ray tube means.

4,469,038

SYSTEM FOR CONTROLLING A SEWING MACHINE

Katsuhiro Fujikawa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,614
Claims priority, application Japan, Nov. 30, 1981, 56-192341
Int. Cl.[3] D05B *69/22*
U.S. Cl. 112—277 14 Claims



1. A system for controlling a sewing machine, comprising;

drive means for driving the sewing machine;

brake means for stopping the sewing machine;

detection means for detecting operational states of the sewing machine;

input means for supplying operation commands to the sewing machine;

control means for controlling said drive means and said brake means in response to a command signal from said input means and a detection signal from said detection means;

said input means including speech input means having a speech recognition unit responsive to predetermined voiced inputs for supplying predetermined signals indicative of said operation commands to said control means; and

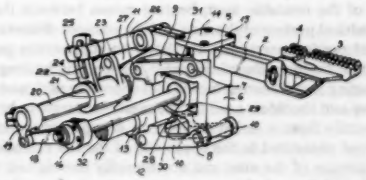
said control means being responsive to said operation command signals from said speech input means to supply predetermined control command signals to said drive means and said brake means.

4,469,039

WORK FEED DEVICE IN SEWING MACHINES

Franco Marchesi, Pavia, Italy, assignor to Rockwell-Rimoldi S.p.A., Italy

Filed Sep. 30, 1983, Ser. No. 537,767
Claims priority, application Italy, Apr. 20, 1983, 20689 A/83
Int. Cl.[3] D05B *27/02*
U.S. Cl. 112—323 6 Claims



1. In a sewing machine having a frame, feed dogs for moving work through the stitching zone and an oscillating feed shaft for driving the feed dogs, an improved support causing the dogs to move in an elliptical path the long axis of which is parallel to the plane of the work, said support comprising:

(a) feed dog support bars connected at one end to the feed dogs and at the other end operably connected to the

oscillating feed shaft for effecting rectilinear movement of the feed dogs;

(b) support means for holding said feed dog support bars in their operative position;

(c) means operatively connecting said support means to the machine frame for vertical movement; and

(d) vertical drive means operatively connected between said support means and the oscillating feed shaft to effect vertical movement of said support means and thereby cause said feed dog support bars and the feed dogs to move in an elliptical path.

4,469,040

SAILBOAT WING SPAR STRUCTURE

Jan C. Gougeon, 249 Lagoon Beach, Bay City, Mich. 48706, and Georg K. Thomas, 1785 N. Golfview, Essexville, Mich. 48732

Filed Apr. 14, 1982, Ser. No. 368,226
Int. Cl.³ B63H 9/04
U.S. Cl. 114—104 2 Claims

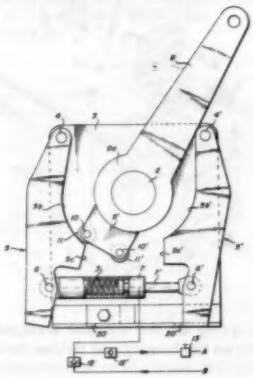
1. A sailboat including a hull and a deck mounted at a level above the bottom of the hull; a vertically axially extending, rotatable, wing spar hollow mast of generally teardrop shape in cross section, with one end provided with a semi-cylindrical portion; a wheelhouse cockpit for said sailboat remote from said mast; a tubular bearing mount structure fixedly supported by the hull and extending above the deck the bearing mount structure including a stepped portion forming a shoulder at a spaced distance above the deck from which a reduced diameter cylindrical portion extends upwardly to receive the lower end of the rotatable mast; bearing means between the semi-cylindrical portion of the mast and the reduced diameter cylindrical portion permitting the latter to support the mast for rotation on the reduced diameter portion, the bearing means including thrust bearing means for supporting said mast axially above said shoulder; a sail for the mast mountable to be drawn upwardly from a furled position to an operative position; a halyard connected to the upper end of the sail extending into the interior of the mast and downwardly therein and out the lower end thereof; there being an opening in the said reduced diameter portion between the shoulder and deck; line guiding means mounted within said reduced diameter portion below the mast around which the halyard is trained to guide it for vertical travel in said mast and out said opening; and winch means at said cockpit to which said halyard connects so that it can be operated to raise the sail by the same person who is steering the sailboat.

4,469,041

RUDDER STEERING APPARATUS FOR SHIPS

Branislav J. Bilen, Belgrad, Yugoslavia, assignor to Institut Tehnickih Nauka Srpske Akademije Nauka I Umetnosti, Beigrad, Yugoslavia

Filed Mar. 16, 1982, Ser. No. 358,660
Int. Cl.³ B63H 25/06
U.S. Cl. 114—144 R 8 Claims



1. Apparatus for releasably connecting an angularly displaceable tiller to a rudder shaft upon which it is concentrically mounted, comprising,

(a) a rudder shaft (2);

(b) a tiller (8) including a main portion having at one end a hollow cylindrical portion (8a) mounted concentrically upon said rudder shaft;

(c) a tubular boss (1) concentrically mounted on, and non-rotatably connected with, said rudder shaft adjacent said tiller cylindrical portion; and

(d) means releasably connecting said tiller with said boss, including

(1) a plate (3) containing an opening receiving one end of said boss, said plate being secured to said boss;

(2) a pair of generally parallel spaced levers (5, 5') arranged on opposite sides of said tiller cylindrical portion, respectively, each of said levers being pivotally connected at a first end with said plate on one side of said tiller cylindrical portion, respectively, said levers extending at their other ends beyond said tiller cylindrical portion, the adjacent surfaces of said lever other ends being provided with opposed parallel flat first cam track surfaces (5c, 5c'), the adjacent surfaces of said levers intermediate said first cam track surfaces and said lever first ends being provided on their adjacent surfaces with opposed concave second cam track surfaces (5b, 5b');

(3) cam follower means (11, 11') connected with said tiller cylindrical portion on the opposite side of, and diametrically arranged relative to, the main portion of said tiller for cooperation with said first cam track surfaces;

(4) releasable means (7) normally biasing said levers together to effect engagement between said cam follower means and said first cam track surfaces; and

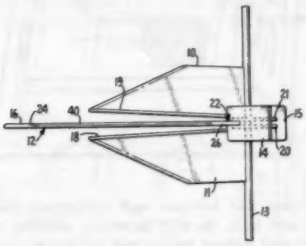
(5) jam-responsive means operable in response to a jammed condition of said rudder shaft for releasing said lever biasing means, whereby under normal operating conditions, angular displacement of said tiller is transmitted to said rudder shaft via said cam follower means, said levers, said plate and said boss, and upon the occurrence of rudder jamming the biasing means is released to disconnect said tiller from said rudder shaft.

4,469,042

SHANK FOR AN ANCHOR STRUCTURE

Robert D. Ogg, Kentfield, Calif., assignor to Alpha Ocean Systems, Inc., Kentfield, Calif.

Continuation-in-part of Ser. No. 175,766, Aug. 6, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,461
Int. Cl.³ B63B *21/44*
U.S. Cl. 114—304 9 Claims



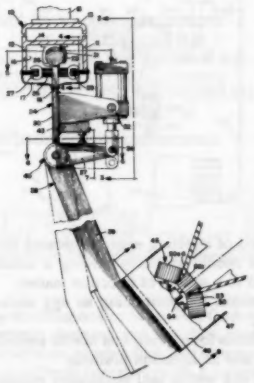
1. In an anchor, a thin, flexible and resilient shank having a tip end and a base end for attachment in an anchor, the shank when at rest having a horizontal plane and a vertical plane normal to the horizontal plane, the shank being inherently rigid in said vertical plane and capable of flexing in a horizontal plane throughout its length until the tip is at a substantial included angle of 5° or more to said vertical plane without causing permanent deformation of said shank.

4,469,043

CLEANING MECHANISM FOR COATING CONTROL FLUID NOZZLE

Herbert B. Kohler, Greentown; John B. Kohler, and Gordon A. E. Kohler, both of North Canton, all of Ohio, assignors to The Kohler Coating Machinery Corporation, Greentown, Ohio

Filed Dec. 7, 1982, Ser. No. 447,636
Int. Cl.³ B05B *15/02*
U.S. Cl. 118—63 14 Claims



1. A combination fluid nozzle and cleaning mechanism therefore including:

(a) a gaseous fluid nozzle for metering a thin film of liquid being applied to a moving substrate, said nozzle having a pair of elongated spaced lips defining a nozzle discharge opening;

(b) means for moving at least one of the nozzle lips between a working position adjacent the substrate and a cleaning position;

(c) cleaning means engageable with the nozzle lips for cleaning said lips;

(d) means for moving the cleaning means into and out of engagement with the nozzle lips;

(e) carriage means for supporting the cleaning means;

(f) frame means located adjacent the nozzle for supporting the carriage means; and

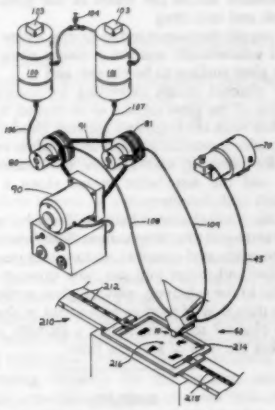
(g) drive means for moving the carriage means along the frame means and the supported cleaning means across the length of the elongated nozzle lips.

4,469,044

APPARATUS AND METHOD FOR PRODUCING UNIFORM FIRED RESISTORS

Terry R. Bloom, Middlebury, and Marion E. Ellis, Decatur, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 185,757, Sep. 10, 1980, Pat. No. 4,338,351. This application Jun. 4, 1982, Ser. No. 385,113
Int. Cl.³ H01C *17/06*
U.S. Cl. 118—665 11 Claims



1. A resistive mixture blending and application system for producing uniform fired thick film resistors, comprising at least two separate means for supplying two resistance materials of different resistance values, means for controlling the relative proportions of each such material in order to effect an intermediate mixture having a resistance value in accordance with the proportionality of the constituent resistance materials, means for mixing the two resistance materials to a homogeneous mixture, means for applying the homogeneous mixture onto a substrate for forming the mixture into a uniform fired resistor having a resistance value of a predetermined amount, means for continuously measuring the resistance value of fired resistors developed from said mixture of materials, and means responsive to said measuring means for adjusting the proportions of said resistance materials to maintain a predetermined resistance value.

4,469,045

COATING GLASS

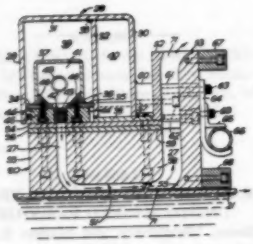
Peter Chesworth, Longton, England, assignor to Pilkington Brothers P.L.C., St. Helens, England

Continuation of Ser. No. 223,714, Jan. 9, 1981, abandoned, which is a division of Ser. No. 094,988, Nov. 16, 1979, abandoned, which is a continuation of Ser. No. 931,002, Aug. 4, 1978, abandoned, which is a continuation of Ser. No. 693,504, Jun. 7, 1976, abandoned. This application May 16, 1983, Ser. No. 493,657

Claims priority, application United Kingdom, Jun. 11, 1975, 25077/75

Int. Cl.[3] **B05C** *1/04*

U.S. Cl. 118—718 **10 Claims**



1. Apparatus for coating a surface of moving flat glass by deposition of a coating material on the glass surface, said apparatus comprising:

a support for the glass to be coated; gas distributor means, positionable across the width of the glass surface to be coated, and including

a gas supply duct arranged to supply a flow of coating gas at a substantially uniform pressure across the width of the glass surface to be coated, and

guide channel means extending for location across the width of the glass surface to be coated, and operable to define with the relatively moving glass surface a chamber which extends parallel to the glass surface; and

means for effecting said relative movement between the glass and the distributor means along a straight path through said chamber;

said guide channel means being defined by smooth shaped walls arranged to guide said gas flow from the gas supply duct towards said chamber, to turn said gas flow into said chamber and direct said gas flow through said chamber parallel to the relatively moving glass surface and parallel to the direction of relative movement of that surface; said guide channel means including a smooth, curved section to effect the turn of said gas flow.

4,469,046

ODORLESS ANIMAL LITTER UNIT

Patrick Yananton, 1518 Little Hill Rd., Point Pleasant, N.J. 98762

Continuation-in-part of Ser. No. 909,256, May 24, 1978,. This application Oct. 27, 1981, Ser. No. 315,307

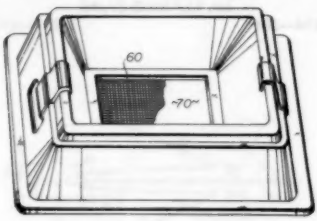
Int. Cl.[3] **A01K** *29/00*

U.S. Cl. 119—1 **6 Claims**

1. A container for use with a sorbent pad comprising, a self supporting structure having a base and four walls, sorbent pad laminate means for the collection of animal urine, comprising in combination;

a sorbent layer of material having a high absorbency capacity for urine;

screen means on the side of said sorbent layer opposite said base whereby said sorbent layer is protected from being torn by animal claws by said screen means, a lid member, said lid member having four inner walls and four outer walls spaced from said four inner walls and dimensioned to receive said fours walls of said self supporting structure between said four inner walls and said four outer walls, wherein said sorbent pad is positioned in said self supporting structure and is dimensioned such that it completely covers said base of said self supporting structure, said lid member being dimensioned such that the lower edge of said inner walls engages



said sorbent pad laminate and compresses said laminate against said base, thereby providing securing means, for securing said sorbent pad to said self supporting container and preventing relative movement of said sorbent pad and said self supporting structure.

4,469,047

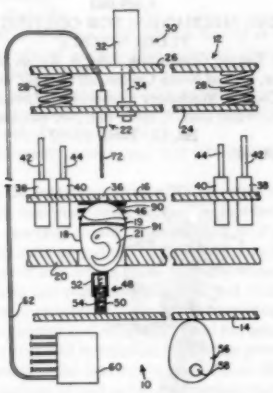
APPARATUS AND METHOD FOR INJECTING EGGS

Gary E. Miller, 5369 Baldwin Park, Murray, Utah 84123

Filed Oct. 25, 1983, Ser. No. 545,204

Int. Cl.[3] **A01K** *45/00*

U.S. Cl. 119—1 **18 Claims**



17. A method of injecting eggs comprising the steps of:

providing a needle assembly having a needle and being connected to a source of injection matter;

providing means for positioning an egg under said needle assembly;

providing means for moving said needle assembly between a retracted and an injection position;

inserting an egg within said positioning means;

positioning said egg under said needle assembly;

moving said needle assembly from said retracted towards said injection position and accelerating said needle assembly during this movement;

decelerating said needle assembly immediately after said needle has pierced the shell of said egg to a slow velocity;

slowly continuing the movement of said needle assembly towards the injecting position at a slow velocity until said needle reaches the injecting position;

injecting said matter into said egg through said needle;

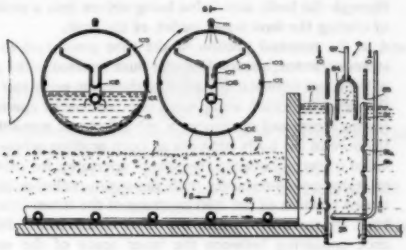
retracting said needle from said egg.

4,469,048

METHOD AND APPARATUS FOR REARING POST-LARVAE SHRIMP

Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 952,664, Oct. 19, 1978, Pat. No. 4,285,298. This application May 14, 1981, Ser. No. 263,497
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—2 7 Claims



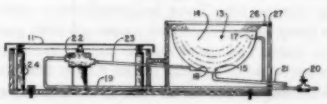
1. A system for rearing post-larvae shrimp comprising:
an enclosure for receiving a medium;
habitat means disposed in said enclosure for providing habitats for said shrimp; and
filtration means for continuously filtering the medium in said enclosure, including a filter assembly and a pump for pumping the medium of said enclosure through said filter assembly, said filter assembly including:
particulate filter means connected to the output of said pump;
bio-filter means for receiving the output of said particulate filter means;
and foam fractionator means for receiving the output of said bio-filter means.

4,469,049

WATERING DEVICE

James Livingston Waynick, 906 S. Lindell Rd., Greensboro, N.C. 27403

Filed Sep. 27, 1982, Ser. No. 423,834
Int. Cl.³ A01K *7/06*
U.S. Cl. 119—76 5 Claims



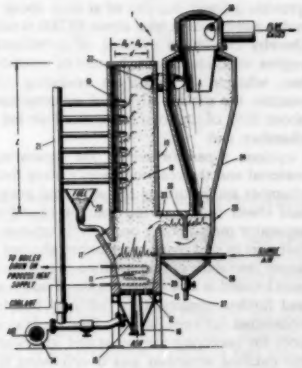
1. A sanitary watering device to provide fresh running water which is constantly draining and which is animal activated comprising: a reservoir, an inlet, said inlet communicating with said reservoir, a pressure operated valve, a pressure-plate, said pressure-plate contacting said valve, resilient support means, said support means contacting said pressure-plate, said valve communicating with said inlet through an inlet supply tube, said supply tube sloping downwardly from said valve to said inlet, a first outlet, said first outlet communicating with said reservoir, a second oulet, said second outlet positioned above said first oulet and having a greater diameter than said first outlet, said second outlet communicating with said reservoir, said reservoir having an inner wall with a smooth, totally drainable surface, a shelf, said shelf joined to said reservoir, a lip, said lip joined to said shelf whereby unused water entering said reservoir will constantly drain through said first outlet and said reservoir will be dry and virtually bacteria free upon draining.

4,469,050

FAST FLUIDIZED BED REACTOR AND METHOD OF OPERATING THE REACTOR

Jakob Korenberg, York, Pa., assignor to York-Shipley, Inc., York, Pa.

Filed Dec. 17, 1981, Ser. No. 331,767
Int. Cl.³ F22B *1/02*
U.S. Cl. 422—4 D 30 Claims



1. A method of operating a circulating fluidized bed combustion reactor, comprising:
providing a substantially upright fluidized bed reactor containing a bed of granular material and having an upper region and a lower region, said upper region having a cylindrically shaped interior surface;
feeding matter to be combusted into said lower region of the reactor;
supplying a first stream of pressurized air to said reactor through a plurality of openings at the bottom of said lower region at a sufficient velocity to fluidize said granular material in the circulating regime, whereby at least a substantial portion of said granular material is continually entrained upward into said upper region;
tangentially supplying a second stream of pressurized air to said upper region of the reactor through at least one opening in said cylindrical interior surface, wherein, at maximum operating capacity for the reactor, said second stream of air constitutes in excess of about 50% of the total pressurized air fed to the reactor;
maintaining a Swirl number of at least about 0.6 and a Reynolds number of at least about 18,000 in said upper region for inducing in said entrained bed material and any gases present in said upper region a cyclone of turbulence and at least one, internally generated recirculation zone in said upper region which increases the rate of combustion in the reactor, and
removing a portion of the entrained granular material and the gases resulting from combustion from said upper region of the reactor at a location adjacent the upper boundary of said cyclone of turbulence, separating said portion of the granular material from said combustion gases and returning said separated granular material to said lower region of the reactor.

20. A fast fluidized bed reactor, comprising:
(a) a substantially upright fluidized bed reaction chamber for containing a bed of granular material, said chamber hav-

ing an upper region and a lower region, said upper region having a cylindrically shaped interior surface;

(b) means for feeding matter to be reacted into said lower region of the reaction chamber;

(c) means for supplying a first stream of pressurized air to said reaction chamber through a plurality of openings in said lower region at a sufficient velocity to fluidize and granular material in the circulating regime, whereby at least a portion of the granular material is continually entrained upward into said upper region;

(d) means for tangentially supplying a second stream of pressurized air to said upper region of the reaction chamber through at least one opening in said cylindrically shaped interior surface, said second stream being supplied, and said reactor being constructed, in a manner adapted to provide a Swirl number of at least about 0.6 and a Reynolds number of at least about 18,000 in said upper region, thereby creating a cyclone of turbulence in the upper region which increases the rate of reaction in said chamber, wherein, at maximum operating capacity for the reactor, the second stream of air constitutes in excess of about 50% of the total pressurized air fed to the reaction chamber; and

(e) cyclone separator means for separating the granular material and the reaction gases exiting from said reaction chamber and returning the separated granular material to said lower region of the reaction chamber, said cyclone separator means being operatively connected between an exit port in said reaction chamber situated adjacent to the upper boundary of said cyclone of turbulence and an inlet port located in said lower region of said reaction chamber, and further comprising a fluidized bed trap operatively connected between said cyclone separator and said inlet port for receiving the separated granular material from the cyclone separator and overflowing it into said inlet port, said fluidized bed trap containing a solid partition for eliminating cross flow of gases between said reaction chamber and said cyclone separator.

4,469,051

EMERGENCY SHUT-OFF DEVICE, IN CASE OF LEAKAGE OF A STEAM GENERATOR TUBE

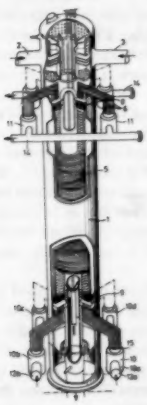
Claude Malaval, Antony, France, assignor to Novatome, Le Plessis Robinson, France

Filed Mar. 7, 1983, Ser. No. 472,816

Claims priority, application France, Mar. 31, 1982, 82 05542

Int. Cl.³ F22B *37/44*

U.S. Cl. 122—507 **6 Claims**



1. Emergency shut-off device in the case of leakage of a tube of a steam generator comprising a jacket containing a tube bundle, within which a liquid metal circulates in contact with the outer surface of tubes of the bundle and applies the heat of vaporization to feed water circulating in each of the tubes two terminal of which portions pass through the jacket and are connected, one to a water supply device and the other to a collector collecting steam formed in the tube, arranged outside the jacket, said device comprising:

in the terminal portion of the tube connected to the water supply device, a tubular bush inserted in the path of the feed water between the supply device and a portion of the tube entering the jacket, comprising inlet and outlet apertures for the water and containing a valve connected to the bush by a breakable part, in the case of puncture of the breakable part manifested by increased flow rate of water through the bush, said valve being driven into a position of closing the feed water outlet, of the bush,

and in the terminal portion of the tube connected to the steam collector, a second tubular bush inserted in the path of the steam between the jacket of the steam generator and the steam collector, comprising inlet and outlet apertures for the steam and containing a valve free and movable in the bore of the bush, between an open position where the valve is placed between two sets of apertures, for passage of steam communicating with the steam collector and a closed position of the inlet aperture of the steam into the bush, by movement under the effect of a pressure difference appearing between the inner space of the steam collector and the inside of the bush, in the case of a leakage in the tube.

4,469,052

COOLING SYSTEM IN A LIQUID COOLED INTERNAL COMBUSTION ENGINE

Tetsuzo Fujikawa, Kobe; Ryoji Uda, Kakogawa, and Hitoshi Yamamoto, Hyogo, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

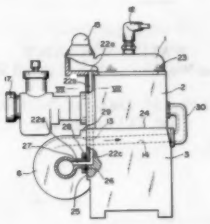
Division of Ser. No. 199,400, Oct. 21, 1980, Pat. No. 4,382,426.

This application Sep. 30, 1982, Ser. No. 430,568

Claims priority, application Japan, Oct. 22, 1979, 54-146697

Int. Cl.³ F01P *7/16*

U.S. Cl. 123—41.1 **3 Claims**



1. A cooling system for an internal combustion engine comprising:

an engine section including a cylinder head, a cylinder case and a crank case to contain a plurality of reciprocating pistons and a liquid passage for cooling the engine section by liquid flowing in the passage, said pistons being disposed in said engine section parallel to each other,

pump means situated outside said engine section, said pump means forcibly transmitting liquid into said liquid passage in said engine section to cool said engine section,

thermostat means connected to said cylinder head between the two adjacent pistons, said thermostat means being connected to said liquid passge in said engine section so that the liquid pumped by said pump means flows out through said thermostat means,

a radiator connected between said thermostat means and said pump means to cool the liquid from the engine section

and to supply the cooled liquid again to the engine section by means of said pump means, and

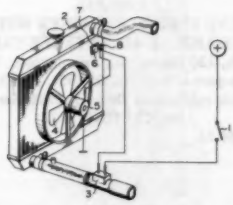
a by-pass canal integrally formed inside said engine section for internally connecting said pump means and said thermostat means so that when the liquid passing through said liquid passage in the said engine section is cool, the liquid is transmitted to the pump means through said by-pass canal without passing through the radiator.

4,469,053

AUTOMOTIVE ELECTRIC FAN CONTROLLING DEVICE

Yukio Sakurai, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 10, 1982, Ser. No. 448,763
Claims priority, application Japan, Jan. 13, 1982, 57-2867
Int. Cl.³ F01P *7/12*
U.S. Cl. 123—41.12 **4 Claims**



1. A device for controlling an automotive electric fan driven by a fan motor energized by a battery, comprising:

thermo-switch means for permitting energization of said fan motor by said battery so that said electric fan is driven by said fan motor when a temperature of motor vehicle engine cooling water becomes higher than a predetermined value, thereby forcibly cooling a radiator for a motor vehicle engine; and

control means for interrupting the energization of said fan motor by said battery so that said electric fan is stopped when the running speed of the motor vehicle becomes higher than a predetermined level, said control means comprising detector means for detecting the speed of air flow introduced in said radiator when said motor vehicle is running; and switch means adapted to be turned off in response to said detector means when the speed of said air flow becomes higher than a predetermined level corresponding to said predetermined level of the motor vehicle running speed, thereby interrupting the energization of said fan motor by said battery;

said detector means comprising a flap pivotally mounted at the back of said radiator, and an opening formed at the back of the radiator in opposing relationship to said flap and in communication with the front face of said radiator, said flap being adapted to be pivotally moved through a predetermined angle, in response to the pressure of said air flow passing through said opening, when the running speed of said motor vehicle reaches said predetermined level; and

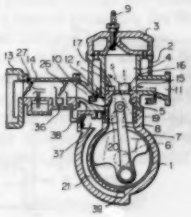
said switch means comprising a normally closed switch adapted to be turned off by said flap when said flap is pivotally moved through said predetermined angle.

4,469,054

TWO-STROKE INTERNAL-COMBUSTION ENGINE

Sigeru Onishi, Kanazawa; Souk H. Jo, Tokyo; Pan D. Jo, Kanazawa, and Satoshi Kato, Ishikawa, all of Japan, assignors to Nippon Clean Engine Research Institute Co., Ltd., Kanazawa, Japan

Filed Jul. 25, 1983, Ser. No. 516,871
Claims priority, application Japan, May 19, 1983, 58-088079
Int. Cl.³ F02B *33/04, 33/14, 25/20*; F24B *13/04*
U.S. Cl. 123—73 R **56 Claims**



1. A two-stroke internal-combustion engine comprising:

a cylinder block having a cylinder therein;

a piston reciprocally movable in said cylinder, said cylinder having an inner wall which has a scavenge port and an exhaust port formed therein and being alternately covered and uncovered by said piston;

a crankcase having therein an interior chamber, the pressure in said interior chamber being alternately increased and decreased due to the reciprocal motion of said piston;

an intake passage having an air inlet and being connected to the interior chamber of said crankcase;

a transfer passage interconnecting the interior chamber of said crankcase and said scavenge port, outside air being fed into said cylinder via an air passage defined by said intake passage, the interior chamber of said crankcase, and said transfer passage;

fuel supply means arranged in said air passage for feeding fuel into said air passage so as to create an air-fuel mixture therein; and

fuel-separating means arranged in said air passage for separating fuel from said air-fuel mixture so as to create a richer air-fuel mixture and a leaner air-fuel mixture, said scavenge port having such a construction that said rich air-fuel mixture flows into said cylinder towards the inner wall of said cylinder located opposite said scavenge port.

4,469,055

CONTROLLED VARIABLE COMPRESSION RATIO PISTON FOR AN INTERNAL COMBUSTION ENGINE

Dwight A. Caswell, 15095 Fruitvale Ave., Saratoga, Calif. 95070

Filed Jun. 23, 1980, Ser. No. 161,774
Int. Cl.³ F02B *75/04*
U.S. Cl. 123—78 B **15 Claims**

1. A variable compression ratio piston assembly for an internal combustion engine having at least one firing chamber defined between a piston and or upper end of a cylinder, comprising:

a piston base and a pivotally attached connecting rod within a cylinder of an engine block;

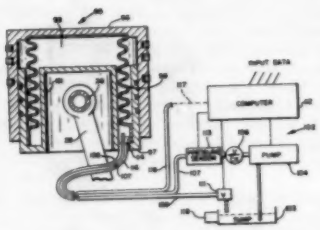
a movable piston cap portion connected to the base and having an outer end positioned outwardly of the base, constituting a boundary of the firing chamber of the cylinder;

adjustment means associated with and operable between the piston base and the movable piston cap portion for moving the movable portion to adjust the resulting compression ratio of the piston and cylinder, comprising an expansible fluid chamber between the piston base and the movable cap portion, operable to move the movable portion in

response to changes in volume of hydraulic fluid in the expansible fluid chamber;

control means external to the engine block for regulating the adjustment means to provide a desired compression ratio;

a hydraulic conduit connecting the adjustment means and the control means, connected to the piston base and in communication with the expansible fluid chamber, said conduit passing through the cylinder out of a path of the connecting rod and out through a wall of the engine block, with means for accommodating reciprocal piston motion;



computer means connected to the control means for receiving input information pertaining to the condition of operation of the engine and formulating input command signals according to a predetermined program, and sending the signals to the hydraulic control means to control the compression ratio;

whereby the compression ratio of the piston and cylinder can be controlled externally to the engine while the engine is operating.

4,469,056

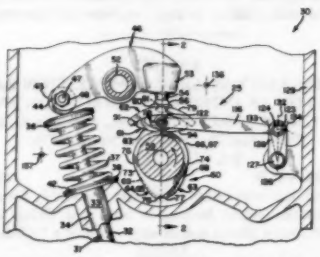
DUAL FOLLOWER VARIABLE VALVE TIMING MECHANISM

Edward M. Tourtelot, Jr., deceased, late of Evanston, Ill., and by John A. Powers, executor, Winston & Strawn, Suite 5000, One First National Plaza, Chicago, Ill. 60603

Filed Feb. 22, 1983, Ser. No. 468,321

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **21 Claims**



4. Mechanism for varying the time at which a valve for controlling the flow of fluid into or out of a combustion chamber of an internal combustion engine opens and closes, said combustion chamber being defined by a cylinder in the engine and piston means movable in the cylinder for varying the volume thereof, said engine also including a rotatable camshaft driven in timed relation with the speed of the engine and linkage means for transmitting reciprocating movement to said valve, said mechanism comprising cam means on said camshaft and including a first cam member adapted to effect movement of said linkage means and having a profile portion contoured to provide a first timing for said valve such as will provide optimum performance and efficiency of the engine throughout one set of operating conditions, said cam means also including a second cam member adapted to effect movement of said linkage means and having a profile portion contoured to provide a second timing for said valve such as will provide optimum performance and efficiency of the engine throughout another set of operating conditions, first follower means engaging said cam members and movable thereby, second follower means engaging said first follower means and said linkage means, said first and second follower means coacting with said cam members to proportion the movement imparted to said linkage means by said cam members, and operating means for varying the position of one of said first and second follower means with respect to the other of said first and second follower means and thus the time of, rate at which and extent of movement imparted by said first and second cam members to said linkage means and said valve, said linkage means including a rocker arm having opposite ends and mounted for movement about an axis that extends substantially parallel to the axis of said camshaft, said second follower means being mounted for and responsive to rocking movement of said rocker arm, and said first follower means having at least one nonplanar control surface engaging one or the other or both of said first and second cam members and another nonplanar control surface engaging a nonplanar control surface on said second follower means.

4,469,057

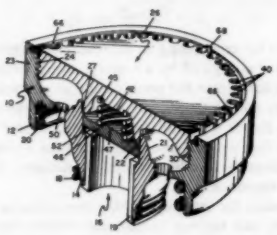
POPPET VALVE SPRING RETAINER WITH INTEGRAL MECHANICAL ADJUSTABLE TAPPET

Alfred A. Black, 126 Beaver St., Framingham, Mass. 01701

Continuation-in-part of Ser. No. 055,951, Jul. 9, 1979, Pat. No. 4,321,894. This application Dec. 31, 1981, Ser. No. 336,283

Int. Cl.³ F01L *1/22*

U.S. Cl. 123—90.54 **12 Claims**



1. A device for gap adjustment between a valve stem and its operation means within an internal combustion motor of the type having a valve spring retainer member adapted to be retained upon said valve stem, a first adjustment means incorporated into said valve spring retainer member for adjustment of said gap, a lower valve spring retainer member having a valve stem receipt aperture defined therein, a cap member, means for adjustment of said cap member in relation to said valve spring retainer member for adjustment of said gap, and a second adjustment means disposed above said valve stem receipt aperture for adjusting the gap between the top of said valve stem and said cap member and limiting the protrusion of said valve stem into said valve stem receipt aperture while allowing for the thermal expansion and reciprocating movement of said valve stem wherein the improvement comprises an improved means of adjustment of said cap member including:

a plurality of apertures defined around the perimeter of the top surface of said cap;

means to engage said apertures and rotate said cap to a desired position;

lock means to retain said cap in said position, said lock means including:

a split ring member;

hook members extending on an arc radius from said split ring member,

and each adapted to engage into one of said apertures defined in said cap;

a channel defined in said lower valve spring retainer member for receipt of said split ring member;

a lock receipt aperture defined within said channel; and

a lock protrusion on said split ring alignable and insertable into said receipt aperture when said split ring is in said channel and said hook members are in said selected apertures in said cap so as to prevent rotation of said ring and said cap.

4,469,058

IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

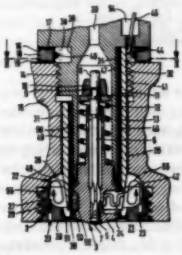
Ernst Linder, Muehlacker, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,274

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1982, 3224048

Int. Cl.³ F02B *9/08*; F02P *19/00*

U.S. Cl. 123—145 A **15 Claims**



1. An incandescent ignition arrangement for an internal combustion engine having a main combustion chamber and a fuel injecting device with a longitudinal axis, the arrangement comprising

means forming an ignition chamber with at least one overflow passage communicating said ignition chamber with the main combustion chamber, said ignition chamber being formed as an annular space coaxial with and surrounding the fuel injection device, said overflow passage raising toward a reference plane extending normal to the longitudinal axis of the fuel injection device and having a component which extends tangentially to a periphery of said annular space and is open into the latter, said overflow passage having an axis and extending to said reference plane at an angle selected so that an extension of the axis of said overflow passage lies inside a fuel ejected from the fuel injection device; and

an electrically heatable incandescent ignition means lying inside a contour of said ingnition chamber.

4,469,059

SPARK PLUG

Charles A. Hukill, 808 Kewanna Ave., Pittsburgh, Pa. 15234

Continuation-in-part of Ser. No. 106,420, Dec. 21, 1979, Pat. No. 4,325,332. This application Apr. 16, 1982, Ser. No. 369,188

Int. Cl.³ F02P *13/00*

U.S. Cl. 123—169 PA **10 Claims**

1. A spark plug for igniting air-fuel mixtures, comprising:

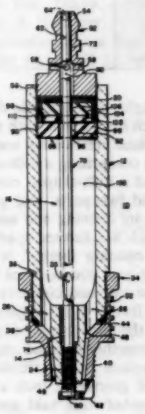
an elongated annular body, having one tapered end and defining an axial bore of corresponding form, the tapered end having at least one first passageway therethrough;

a first cap assembly overfitting the tapered end of the annular bore and defining a first channel between the at least one first passageway and a combustion cylinder into which the spark plug is mountable, the first cap assembling bearing a first electrode projecting into the combustion cylinder;

a second cap assembly closing the other end of the annular body and having at least one second passageway through which additional air can flow into the axial bore;

an axially disposed electrical conducting member, having one end connected to the second cap assembly, extending through the bore, passing through and closing the tapered end and forming a second electrode, the first and second electrodes together defining a spark gap;

a stop member disposed in the bore and closely spaced from the second cap assembly, dividing the bore into a valve chamber between the stop member and the second cap assembly, and a compression chamber, the stop member having an opening which defines a second channel between the stop member and the conducting member; and,



a valve disk, slidingly disposed on the electrical conducting member, in the valve chamber, the valve disk having a smaller diameter than the valve chamber and having at least one third passageway communicating between the outer circumferential wall of the valve disk and the surface thereof facing the stop member, the other surface thereof being flat, the valve disk being subjected to the operating pressure of the cylinder through the first channel, the at least one first passageway, the combustion chamber and the second channel, the valve disk being pressed into a sealing position against the second cap assembly during compression, ignition and exhaust strokes, and being pulled into an open position, against the stop member, during intake strokes, whereby unburned gases enter the combustion chamber during the exhaust strokes and additional air is pulled into the combustion chamber during the intake strokes, the unburned gases and additional air being together injected back into the cylinder prior to each ignition, the valve disk being substantially immune to damage from the successive shock loading to which it is subjected.

4,469,060

GASTIGHT, UNDETACHABLE CONNECTION OF TWO METAL PARTS

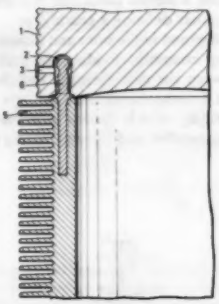
Friedrich Jordan, Kürten, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,003

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046776

Int. Cl.³ F02F *1/00*

U.S. Cl. 123—193 CH 4 Claims



1. A positive, gastight, undetachable die cast connection of two metal parts which form a unit with a seal tightness therebetween to reduce initial prestressing and deformation during subsequent treatment comprising a bulb-shaped groove in one of said two parts, and a bulb-shaped counterpiece associated with the other of said two parts, said groove having a base which is wider than its opening and said groove having inclined sidewalls which are further apart at the base of said groove than at the opening thereof, with the base of said groove being circular, said counterpiece having a head which is wider than its base and said counterpiece having inclined sidewalls which are further apart adjacent the head of said counterpiece than at the base thereof with an annular depression surface joining together its head and sidewalls, with the head of said counterpiece being circular, said counterpiece being inserted in said groove in such a way as to form an annular chamber therebetween, said annular chamber being filled with pouring of molten metal under pressure, said inclined sidewalls and circular head of said counterpiece assuring an occlusion-free pouring since sharp corners and edges are avoided on which dirt and gas bubbles can settle while eliminating cracks or fissures caused by sharp corners and edges, which occur under great mechanical and thermal loads acting thereon.

4,469,061

VALVE ACTUATING METHOD FOR INTERNAL COMBUSTION ENGINE WITH VALVE OPERATION SUSPENDING FUNCTION

Yoshio Ajiki, Saitama; Shoichi Honda, and Masaaki Matsuura, both of Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1983, Ser. No. 512,048

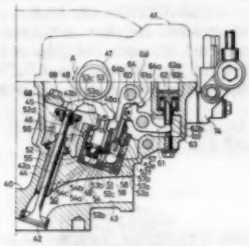
Claims priority, application Japan, Jul. 8, 1982, 57-118991; Jul. 8, 1982, 57-118992; Jul. 19, 1982, 57-125381; Jul. 28, 1982, 57-131612; Aug. 2, 1982, 57-135035

Int. Cl.³ F02D *13/06*

U.S. Cl. 123—198 F 7 Claims

1. In a valve actuating method with a function for suspending valve operation in an internal combustion engine, wherein each of intake and exhaust valves is actuated by a rocker arm operated in response to the rotation of valve actuating cam in synchronism with the engine operation, said rocker arm being supported at its one end in a rigid manner by a supporting member retained by a cylinder head of said engine through a retaining member, the retention of said supporting member by said retaining member is selectively dismissed to nullify said supporting reactional force for said rocker arm to permit said supporting member to float to thereby effect suspension of operation of said valve, an improvement comprising the steps of; releasing the retention of said supporting member by said retaining member to permit said supporting member to float with respect to said cylinder head during valve suspension, and holding said supporting member at a position where sliding contact between said rocker arm and said valve actuating cam is prevented.

4. In a valve actuating mechanism having a valve operation suspending function, including a rocker arm for actuating an intake or exhaust valve in accordance with the rotation of a cam operated in synchronism with the engine rotation, and a



supporting member adapted to support one end of said rocker arm, said supporting member being provided at a cylinder head through a retaining member, the retention of said supporting member by said retaining member being selectively dismissed to nullify the supporting reactional force for said rocker arm to make said supporting member float to thereby effect a suspension of operation of said valve, the improvement comprising: said rocker arm formed with a curved surface at its upper end at a position adjacent to a fulcrum point thereof, and a control arm disposed above said supporting member and biased by a resilient member in a direction of curving of said curved surface so as to be able to move onto said curved surface during the suspension of operation of said valve; said curved surface being formed to intersect the locus of rotation of an end of said control arm such that the end of said rocker arm adjacent to the fulcrum is located outside said locus when said valve is fully opened.

4,469,062

INTAKE PORT OF INTERNAL COMBUSTION ENGINE

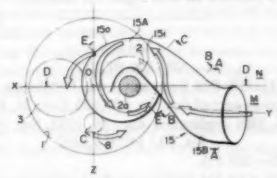
Shinzi Ikegami, and Koichi Tezuka, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Oct. 21, 1982, Ser. No. 435,660

Claims priority, application Japan, Oct. 29, 1981, 56-172087

Int. Cl.³ F02F *1/42;* F01L *3/00*

U.S. Cl. 123—306 5 Claims



1. An internal combustion engine including a combustion chamber in a cylinder, an exhaust port in communication with the combustion chamber at an upper portion of the cylinder, an

intake port in communication with the combustion chamber at an upper portion of the cylinder, the intake port having an approach portion and a turning portion connected thereto which have an inner turning wall and an outer turning wall, respectively, an exhaust valve for controlling exhaust of combustion gases from the combustion chamber to the exhaust port, and an intake valve for controlling intake air which flows in a direction from the intake port into the combustion chamber, the intake valve having a valve shaft, the turning portion of the intake port turning around the valve shaft of the intake valve in a spiral shape so as to produce swirls in the cylinder, the axis of the intake valve shaft being positioned at a plane passing through a central axis of the cylinder,

the improvement comprising:

the intake port having an entrance portion preceding the approach portion, the entrance portion of the intake port being positioned completely out of the plane;

the entrance portion of the intake port being so constructed and arranged that a major portion of the air flow entering the entrance portion forms a central axis, the central axis of the major air flow extending to intersect a fore section of the inner turning wall of the turning portion of the intake port;

the fore section arranged in the direction of air flow and crossing the plane from one side of the plane to the other side of the plane and being inclined in a forward direction;

the turning portion arranged in the direction of fluid flow to thereafter turn around the valve shaft of the intake valve and cross the plane again from said other side to said one side of the plane.

4,469,063

INTAKE PORT STRUCTURE FOR INTERNAL COMBUSTION ENGINES

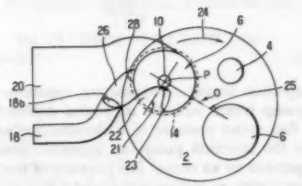
Yasuyuki Sugiura, and Kazuo Nakama, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 21, 1982, Ser. No. 370,325

Claims priority, application Japan, May 7, 1981, 56-67637; Mar. 1, 1982, 57-30504

Int. Cl.³ F02B *31/02*

U.S. Cl. 123—308 **14 Claims**



1. An intake port structure for an internal combustion engine, comprising:

a cylinder head having a combustion chamber and an intake valve seat;

an intake valve reciprocably mounted in said cylinder head and having an elongated stem fixed to a valve head provided with a valve face engageable with said valve seat;

a primary intake passage defined in said cylinder head for supplying an air-fuel mixture into said combustion chamber in a full range of load conditions;

a secondary intake passage defined in said cylinder head for supplying an air-fuel mixture into said combustion chamber under relatively high load conditions;

said primary intake passage having a first outlet port opening directly into said secondary intake passage directly above said valve seat, the flow from said first outlet port being directed approximately tangentially to said combustion chamber and angled downwardly at a rather small acute angle with respect to a plane defined by said valve seat;

said secondary intake passage having a second outlet part opening directly into said combustion chamber through said valve seat;

a deflector wall fixed to said cylinder head and protruding sidewardly into said secondary passage closely adjacent said second outlet port and having a distal end positioning closely adjacent to said valve stem so that the flow of air-fuel mixture is deflected sidewardly substantially around one side of said valve stem and thence into said combustion chamber to form a swirl of air-fuel mixture in said combustion chamber; and

said secondary intake passage having a groove extending from said first outlet port along an upstream side of said deflector wall for guiding the air-fuel mixture flowing from said primary intake passage through said second outlet port into said combustion chamber.

4,469,064

APPARATUS FOR CONTROLLING INTERNAL COMBUSTION ENGINE

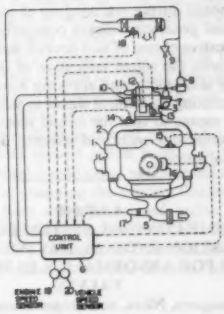
Toshio Manaka, and Takeshi Atago, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

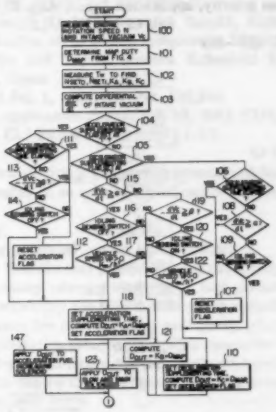
Filed Sep. 8, 1982, Ser. No. 416,044

Claims priority, application Japan, Sep. 9, 1981, 56-141018

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339 **12 Claims**





1. An apparatus for controlling an internal combustion engine comprising:

an intake air passage for supplying air into a combustion chamber of the engine;

a throttle valve disposed in said intake air passage;

electronically controlled fuel supplying means for controlling a quantity of fuel supplied into the combustion chamber of said engine on the basis of operating parameters of said engine;

supplementing air control means for controlling a quantity of air flowing through said intake air passage for the purpose of controlling a rotational speed of said engine in the stage of warming up;

first desired warming-up rotational speed characteristic generating means for generating a signal for rotating said engine at a first desired warming-up rotational speed having such a characteristic that the desired warming-up rotational speed decreases with an increase in the engine temperature;

second desired warming up rotational speed characteristic generating means for generating a signal for rotating said engine at a second desired warming-up rotational speed which is lower than said first desired warming-up rotational speed and has such a characteristic that the desired warming-up rotational speed decreases with an increase in the engine temperature; and

control signal generating means including selecting means for selecting the signal from said first desired warming-up rotational speed characteristic generating means when said throttle valve is not opened during warming-up of said engine but selecting the signal from said second desired warming-up rotational speed characteristic generating means when said throttle valve is closed after it has been opened during warming-up of said engine, said control signal generating means comparing said selected signal indicative of one of said desired warming-up rotational speeds with the signal indicative of the actual rotational speed of said engine and applying a control signal to said supplementing air control signal to said supplementing air control means so that the actual rotational speed of said engine coincides with said selected desired warming-up rotational speed.

4,469,065

FUEL PUMP CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES, HAVING A FAIL SAFE FUNCTION FOR ABNORMALITY IN FUEL INJECTION VALVES

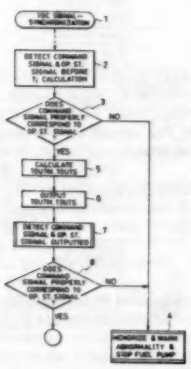
Shunpei Hasegawa, Niiza, and Shigeo Umesaki, Saitama, both of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,237

Claims priority, application Japan, Aug. 17, 1982, 57-142382

Int. Cl.³ F02D 1/12

U.S. Cl. 123—359 **3 Claims**



1. A fuel pump control system for use in an internal combustion engine having fuel supply means for supplying fuel through injection to said engine, control means for determining the quantity of fuel being supplied to said engine in accordance with operating conditions of said engine and generating a command signal indicative of the determined fuel quantity, driving means responsive to said command signal for driving said fuel supply means, and fuel pump means for supplying pressurized fuel to said fuel supply means, wherein said fuel pump control system is adapted to control the operation of said fuel pump means, said fuel pump control system including an abnormality determining means comprising: first monitoring means for monitoring said command signal, second monitoring means for monitoring a signal indicative of the operative state of said fuel supply means, abnormality detecting means adapted to generate an abnormality-indicative signal after the level of said command signal and the level of said signal indicative of the operative state of said fuel supply means have become out of a predetermined logical relationship, and stopping means responsive to said abnormality-indicative signal for rendering said fuel pump means inoperative.

4,469,066

INJECTION TIMING COMPENSATOR FOR FUEL INJECTION PUMP

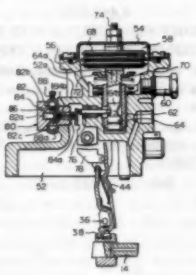
Yasutaka Yuzawa, Higashi Matsuyama, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 375,855

Claims priority, application Japan, May 14, 1981, 56-68624[U]

Int. Cl.³ F02M 59/20

U.S. Cl. 123—380 **5 Claims**



1. An injection timing compensating apparatus for a fuel injection pump which includes an engine driven feed pump supplying fuel under pressure to a chamber defined inside a housing of the injection pump, an injection timing control member operated by an output fuel pressure of the feed pump in accordance with an engine speed, and a fuel control member, characterized by comprising:

a pressure regulator means for regulating a fuel pressure in the chamber of the injection pump housing by controlling fluid communication between the chamber and a low pressure side associated with the injection pump; and

a pressure sensitive actuator means for actuating the pressure regulator means through an operative connection in accordance with a pressure acting thereon;

whereby a timing a fuel injection determined by the fuel injection timing control member is compensated through the injection timing control member in confirmity with a level of the pressure acting on the actuator means;

the operative connection between the pressure regulator means and the pressure sensitive actuator means comprising a vertically reciprocatable control pin which is partly tapered to form a cam section and a follower pin cammed by said cam section transversely relative to the control pin, the pressure regulator means including a body

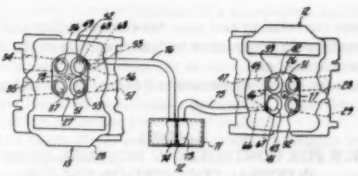
mounted to a housing of the apparatus, a valve member slidably disposed in a bore of the body and a spring biasing the valve member outwardly of the body, each of said body and valve member being provided with passageway means for selective communication of the pump chamber with the low pressure side, the control pin being integrally connected with the pressure sensitive actuator means while the follower pin is positioned to urge the valve member against the action of the spring.

4,469,067

ENGINE INTAKE SYSTEM

Yorio Futakuchi, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 27, 1982, Ser. No. 423,558
Claims priority, application Japan, Sep. 29, 1981, 56-154391
Int. Cl.³ F02B 31/00
U.S. Cl. 123—432 8 Claims



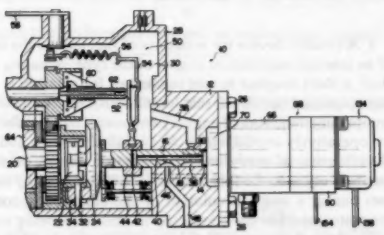
1. In an induction system for a V type engine having a valley between inclined cylinder banks, the improvement comprising a plenum device located in the valley of said V and defining a pair of closed independent plenum chambers, each having a passage means communicating only one of said chambers with a cylinder of a different one of said respective banks.

4,469,068

FUEL INJECTION APPARATUS

Masatoshi Kuroyanagi, Kariya; Masahiko Suzuki, and Yasuhiro Horiuchi, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 3, 1982, Ser. No. 438,724
Claims priority, application Japan, Nov. 10, 1981, 56-179980; Jul. 9, 1982, 57-120129; Jul. 9, 1982, 57-120130; Jul. 16, 1982, 57-124596
Int. Cl.³ F02M 39/00; F02D 1/06
U.S. Cl. 123—447 37 Claims



1. A fuel injection apparatus for injecting a high-pressure fuel to each combustion chamber of an internal combustion engine, comprising:

(A) a fuel injection pump including

(a) a pump housing having a fuel supply chamber,

(b) a pump cylinder formed in said pump housing, and

(c) a pump piston disposed in said pump cylinder to be reciprocal in synchronism with operation of said internal combustion engine, said pump piston and said pump cylinder together defining a fuel pressure chamber, whereby the fuel is supplied from said fuel supply chamber to said fuel pressure chamber upon movement of said pump piston away from said pump cylinder, and the fuel is compressed in said fuel pressure chamber upon movement of said pump piston toward said pump cylinder, the high-pressure fuel being injected into said each combustion chamber of said internal combustion engine; and

(B) an accumulator fixed to said pump housing to control an amount of injection and an injection period of the high-pressure fuel compressed and supplied from said fuel pressure chamber in accordance with the operation of said internal combustion engine,

said accumulator including

cylinder means having a first cylinder portion and a second cylinder portion,

piston means having a first piston portion and a second piston portion which are respectively disposed in said first cylinder portion and said second cylinder portion to be reciprocal therein, said first cylinder portion and said first piston portion forming an accumulation chamber which communicates with said fuel pressure chamber, said first cylinder portion and said second cylinder portion forming an oiltight chamber, said second cylinder portion having a control bore which allows said fuel supply chamber to communicate with said oiltight chamber and is closed by said second piston portion, and said oiltight chamber being closed when a relative distance between said control bore and said second piston portion is changed to close said control bore by said second piston portion, thereby stopping movement of said second piston portion,

coupling means for coupling said first piston portion and said second piston portion to regulate movement of said first piston portion in synchronism with the movement of said second piston portion, and

driving means for driving one of said second cylinder portion and said second piston portion in accordance with an operating condition of said internal combustion engine, and for changing the relative distance between said control bore and said second piston portion to regulate a distance of movement of said second piston portion necessary to close said control bore, thereby defining a maximum volume of said accumulation chamber.

4,469,069

FUEL INJECTION DEVICE

Masatoshi Kuroyanagi, Kariya; Masahiko Suzuki, Aichi, and Shizuo Kawai, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 1, 1983, Ser. No. 510,304
Claims priority, application Japan, Jul. 13, 1982, 57/121742
Int. Cl.³ F02M 39/00; F02D 1/06
U.S. Cl. 123—447 13 Claims

1. A fuel injection device for injecting pressurized fuel into a combustion chamber of an internal combustion engine, comprising:

a pump housing;

a pump cylinder provided in said pump housing;

a pump plunger fitted in said pump cylinder to be reciprocal therein, said pump plunger defining a fuel pressurizing chamber for receiving the fuel in said pump cylinder;

pressurizing means for reciprocating said pump plunger in said pump cylinder in synchronism with operation of the engine, thereby pressurizing the fuel in the fuel pressurizing chamber to supply the pressurized fuel to the combustion chamber; and

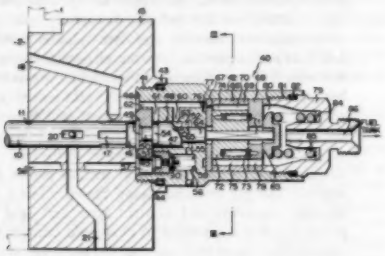
an accumulator for accumulating part of the pressurized fuel delivered from the fuel pressurizing chamber to the combustion chamber,

said accumulator including

cylinder means having a first cylinder portion and a second cylinder portion,

piston means having an accumulator piston, said accumulator piston having first and second piston portions for reciprocating in said first and second cylinder portions, respectively,

said first piston portion defining an accumulation chamber in said first cylinder portion which receives the part of the pressurized fuel pressurized by the fuel pressurizing chamber, said second piston portion being pivotal in said second cylinder portion and defining a fluid-tight chamber filled with a fluid therein, said second cylinder portion having a spill port, the spill port being capable of communicating with the fluid-tight chamber and closed by a predetermined position of said second piston portion upon pivotal movement of said second piston



portion, whereby the fluid in the fluid-tight chamber is spilled through the spill port when the spill port is opened, so that said accumulator piston is moved by a pressure of the pressurized fuel in the accumulation chamber so as to increase a volume of the accumulation chamber, and the fluid-tight chamber is closed when the spill port is closed, so that movement of said accumulator piston is interrupted,

supplying means for supplying a pressurized fluid whose pressure is adjusted in accordance with a given operating state of the engine, and

adjusting means having a fluid pressure chamber which receives the pressurized fluid so as to adjust a pivotal position of said second piston portion in accordance with a variation in pressure of the pressurized fluid in the fluid pressure chamber, thereby adjusting an axial displacing distance of said accumulator piston until said second piston portion closes the spill port.

4,469,070

FUEL CONTROL VALVE

Louis J. Rassey, 29048 Gloede, Warren, Mich. 48093

Filed Mar. 12, 1980, Ser. No. 129,604

Int. Cl.³ F02M *39/00, 37/20*

U.S. Cl. 123—462 **8 Claims**

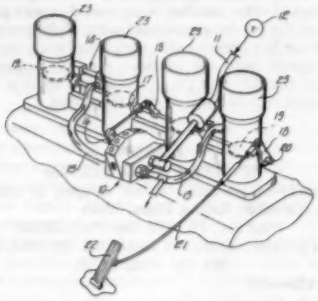
1. A fuel regulating device for a fuel injected internal combustion engine having a movable accelerator, said device comprising:

a fuel control block having a cylindrical chamber and a fuel outlet passageway formed in it,

a plurality of orifices formed in said control block, said orifices extending between and interconnecting said fuel outlet passageway and said chamber, said orifices intersecting said chamber at circumferentially spaced positions,

a cam rotatably mounted in said chamber, said cam defining a subchamber in said cylindrical chamber between one side of said cam and said control block,

said cam being rotatable between a first and second position, wherein the number of orifices fluidly connected with said subchamber increases as said cam moves from said first and toward said second position,



means for rotating said cam between said first and second positions in accordance with the position of the movable accelerator, and

means for supplying pressurized fuel to said subchamber.

4,469,071

DEVICE FOR CONTROLLING THE FUEL-FEED TO AN INTERNAL COMBUSTION ENGINE

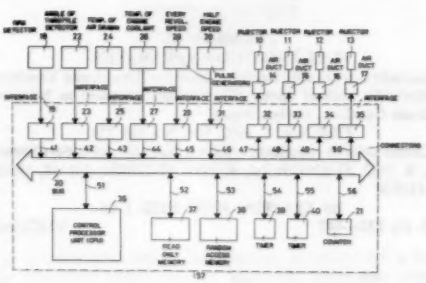
Aldo Bassi, and Franco Arcari, both of Milan, Italy, assignors to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Apr. 1, 1982, Ser. No. 364,315

Claims priority, application Italy, Apr. 6, 1981, 20949 A/81

Int. Cl.³ F02D *17/00*

U.S. Cl. 123—481 **1 Claim**



1. A control device for actuators of fuel feed to the cylinders of an internal combustion engine of the type including a crankshaft, a shaft coupled to said crankshaft for rotation at one half the rotational speed of said crankshaft, said control device comprising detectors of engine parameters, a first pulse generator operatively connected to the engine crankshaft and capable of delivering at every engine revolution impulsive signals in numbers equal to the fuel deliveries to be effected by the actuators during a single revolution of the engine, a second pulse generator operatively connected to said shaft being rotated at a speed equal to one half the crankshaft speed and capable of delivering a phased pulse at every engine cycle, a central processor unit (CPU), a random access memory unit (RAM), a read-only memory unit (ROM) containing calculation programmes of the processor unit, an engine fuel supplying plan with the fuel-metering information as a function of said engine parameters, the values of reference to the engine parameters defining engine operative modes of the preselected combinations of operative and inoperative actuators, a counter register intended to keep the count of the pulses delivered by said first generator and to reset the count in correspondence with the

pulse coming from said second generator, said processor unit comprising:

means to store in a cell of said random access memory the encoded information corresponding to the operative mode with all the actuators in operation;

means to calculate the quantity of fuel each actuator must deliver at every engine cycle in the particular working condition defined by the values taken by said engine parameters, via the fuel metering information associated to said engine parameters in the read only memory;

means to convert the calculated quantity into a command magnitude equivalent to the amount of fuel calculated for said actuators;

means to define the operative mode associated to the particular operative condition of the engine by checking via said engine parameters if a preselected number of actuators only must be activated or all actuators must be activated;

means for setting the activation of a first preselected number of said actuators, if a preselected number of actuators only must be activated;

means to preset the performance of a preselected number of engine cycles;

means to update the calculation of the quantity of fuel that each actuator must dispense at every engine cycle under the particular operative condition as defined by the actual values taken by said engine parameters, with the same procedure as for the previous calculation;

means to check if said preselected number of engine cycles has been performed;

means to set the actuation of a second preselected number of actuators alternately with respect to said first mentioned preselected number of actuators for another preselected number of engine cycles, if the previous number of engine cycles has been performed;

means to calculate an increased quantity of fuel that each actuator must dispense at least with the first cycle of said another preselected number of engine cycles;

means for setting the actuation of all actuators if all actuators must be activated;

means to command the actuation of the actuator indicated by said counter register, in correspondence with every pulse coming from said first generator, if it is ascertained that its actuation has been set on the basis of the forecast operative mode;

means to command the deactivation of said actuator utilizing said command magnitude equivalent to the quantity of fuel that each actuator must dispense at every engine cycle;

means to command the actuator indicated by said counter register to remain inoperative if it is ascertained that its deactivation has been set on the basis of the forecast operative mode;

and means to step forward by a unit of said counter register.

4,469,072

METHOD AND APPARATUS FOR CONTROLLING THE FUEL-FEEDING RATE OF AN INTERNAL COMBUSTION ENGINE

Nobuyuki Kobayashi, Toyota, and Hiroshi Itoh, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 12, 1982, Ser. No. 407,558
Claims priority, application Japan, Aug. 13, 1981, 56-125985
Int. Cl.³ F02D *5/02*
U.S. Cl. 123—491 **8 Claims**

1. A method for controlling the fuel-feeding rate of an internal combustion engine, comprising the steps of:

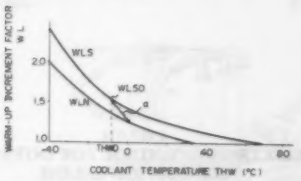
detecting the coolant temperature of the engine to generate a first electrical signal which indicates the detected coolant temperature;

discriminating whether the engine is completely started or not to generate a second electrical signal which indicates the discriminated result;

calculating, in response to said first electrical signal, a first additional increment of the fuel-feeding rate of the engine, said first additional increment being determined depending upon the detected coolant temperature;

calculating, in response to said first electrical signal, a second additional increment of the fuel-feeding rate of the engine, said second additional increment being determined depending upon the detected coolant temperature;

calculating, in response to said first and second electrical signals, the difference between the coolant temperature just at the time the engine is completely started and the present coolant temperature;



correcting the fuel-feeding rate of the engine in accordance with said calculated second additional increment during starting of the engine; and

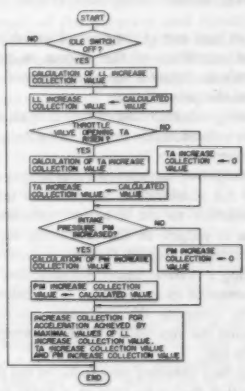
correcting the fuel-feeding rate of the engine after the engine is completely started, in accordance with a third additional increment which is gradually decreased from the value of said calculated second additional increment just at the time the engine is completely started to said calculated first additional increment, inclination of the decrease of said third additional increment being dependent upon said calculated temperature difference.

4,469,073

ELECTRONIC FUEL INJECTING METHOD AND DEVICE FOR INTERNAL COMBUSTION ENGINE

Nobuyuki Kobayashi, Toyota; Toshiaki Isobe, Nagoya, and Teruo Fukuda, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 18, 1982, Ser. No. 390,115
Claims priority, application Japan, Feb. 23, 1982, 57-27842
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—492 **13 Claims**


START
NO
IDLE SWITCH OFF?
YES
CALCULATION OF LL INCREASE COLLECTION VALUE
LL INCREASE COLLECTION VALUE ← CALCULATED VALUE
THROTTLE VALVE OPENING TA DOWN ?
NO
YES
CALCULATION OF TA INCREASE COLLECTION VALUE
TA INCREASE COLLECTION ← 0 VALUE
TA INCREASE COLLECTION VALUE ← CALCULATED VALUE
INTAKE PRESSURE PM INCREASED?
NO
YES
CALCULATION OF PM INCREASE COLLECTION VALUE
PM INCREASE COLLECTION ← 0 VALUE
PM INCREASE COLLECTION VALUE ← CALCULATED VALUE
INCREASE COLLECTION FOR ACCELERATION ACHIEVED BY MAXIMAL VALUES OF LL INCREASE COLLECTION VALUE, TA INCREASE COLLECTION VALUE AND PM INCREASE COLLECTION VALUE
END

1. Electronic fuel injecting method for an internal combustion engine, wherein a basic injection time is obtained in accordance with an intake pressure of said engine and an engine rotational speed, and, during transition, said basic injection time is corrected in accordance with the operating conditions

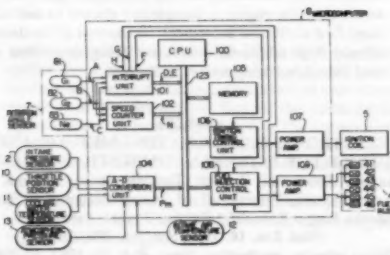
of said engine so as to determine a fuel injection time, characterized in that an after-idle increase correction in which a correction value is increased to a predetermined level when an idle switch is turned "OFF", a throttle valve opening increase or decrease correction in which a correction value is obtained in accordance with the changing speed in opening of a throttle valve, and an intake pressure increase or decrease correction in which a correction value is obtained in accordance with the changing speed of an intake pressure, at least two factors are combined to obtain an increase correction value for acceleration or a decrease correction value for deceleration.

4,469,074

ELECTRONIC CONTROL FOR INTERNAL COMBUSTION ENGINE

Mitsunori Takao, Kariya, and Masumi Kinugawa, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 9, 1982, Ser. No. 396,681
Claims priority, application Japan, Jul. 13, 1981, 56-109162
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—492 **8 Claims**



1. A method for electronically controlling the amount of fuel supplied to an internal combustion engine comprising the steps of:

sensing at least one of the control variables indicative of the loaded condition of the engine at predetermined time intervals to detect a variation thereof from the previous time to the present time;

determining whether said engine is in an accelerating condition or a deceleration condition by judging the sign of said variation;

adding the previous value of a fuel supply amount correction factor for acceleration computed at the time of previous computation to the detected variation only when the engine is judged in the preceding step as being in the accelerating condition thereby computing the sum;

subtracting a predetermined substraction constant from the sum obtained as a result of the addition in the preceding step to compute the difference therebetween, thereby obtaining the new value of the fuel supply amount correction factor;

using the thus obtained new value of the fuel supply amount correction factor to correct a basic fuel supply amount computed separately on the basis of the operating condition of the engine; and

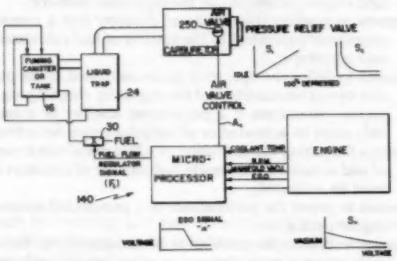
controlling the fuel supply in accordance with a fuel supply control signal representative of the corrected basic fuel supply amount.

4,469,075

VAPOROUS GASOLINE FUEL SYSTEM AND CONTROL THEREFOR

Kenneth A. Jackson, Wooster; George I. Arndt, Loudonville, and James L. Maynard, Wooster, all of Ohio, assignors to V.G.A.S., Inc., Wooster, Ohio

Filed Aug. 25, 1982, Ser. No. 411,415
Int. Cl.³ F02M *17/18*
U.S. Cl. 123—523 **16 Claims**



1. A fuel system for use with an internal combustion engine having associated fuel delivery means and fuel ignitable means for power conversion comprising, a containable source for liquid ignitable fuel, a collector means communicating with said source for collecting fuel fumes or vapor adapted to emanate from said liquid ignitable fuel, means communicable with atmosphere and extending into the container source being operable to transmit air into said source above the liquid fuel therein for generating a fumed fuel-air mixture therefrom, means for generating a fumed fuel-air mixture from said collector means to the associated fuel delivery means of the engine for ignition therein, means coacting with the means communicable with atmosphere and responsive to actuation of the engine for insertion of liquid ignitable fuel into said communicable means for intermixing with intake air therein, means coacting with said communicable means for diffusing the fuel-air mixture entering into said containable source above the liquid fuel therein, trap means connectable to said collector means being operable to receive the vaporous fuel-air mixture and to separate therefrom droplets of fuel remaining in said vaporous mixture and to provide a dried-out vaporous mixture, and means connectible to the trap means and the fuel delivery means of said engine for transmitting the dried-out vaporous mixture to the latter and to thus provide the sole source of fuel to said engine, and electronic control means coacting with said engine and said fuel system being responsive to the operating load conditions of said engine to correspondingly control the fuel to air ratio of the mixture prior to the transmission of said mixture to said fuel delivery means of said engine effective to maintain said mixture as its optimum combustible composition.

4,469,076

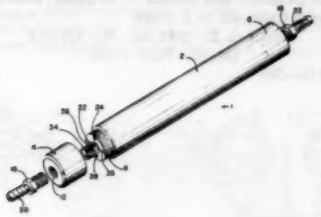
LIQUID FUEL TREATMENT APPARATUS

Carl Wolff, 804 Cherry, Henderson, Nev. 89015

Filed Aug. 30, 1982, Ser. No. 413,219
Int. Cl.³ F02M *27/00*
U.S. Cl. 123—538 **6 Claims**

1. In a vehicle powered by an internal combustion engine having a liquid hydrocarbon fuel reservoir and a fuel inlet line extending between the engine and the fuel source, the improvement therein which comprises fuel treatment apparatus mounted in the fuel inlet line comprising an elongate plastic housing having a plurality of eccentric lengthwise bores therethrough oriented at 90° radial spacing around a longitudinal

housing axis, a shallow axial cavity adjacent each end of the housing, and a cylindrical magnet contained in each cavity,



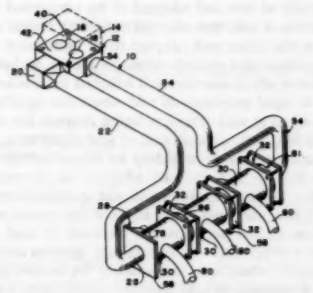
said magnets having poles aligned with the North poles thereof directed toward the outlet end of the housing.

4,469,077

FUEL MIXTURE METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINES

Bobby M. Wooldridge, P.O. Box 337, Buena Vista, Ga. 31803

Filed May 24, 1982, Ser. No. 381,436
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—548 **8 Claims**



1. In a fuel mixture system for an internal combustion engine having a fuel mixture engine inlet, a carburetor and an exhaust system providing heated gases:

a housing on said engine inlet for receiving a fuel mixture from said carburetor, said housing being of three-dimensional construction and having a fuel mixture housing compartment inlet leading to a fuel inlet housing compartment therein,

means on said housing defining said fuel mixture housing compartment inlet separate from a fuel mixture housing compartment outlet within said housing,

first conduit means in closed communication with said housing compartment inlet and leading to

a heat exchanger comprising a heat exchanger unit having a closed heat exchanger compartment in closed communication with said first conduit,

a second conduit leading from the exhaust manifold so as to bring the heated gas from the engine into the heat exchanger unit, and an outlet exchanger conduit means leading from said heat exchanger unit back to the exhaust system of the engine,

a vaporizer and cooling unit comprising a screen and a filter in communication with said heat exchanger unit whereby the fuel mixture which has been heated in the heat exchanger unit passes through the filter and small openings in the screen of the vaporizer unit and is cooled relative to the raised temperature, and

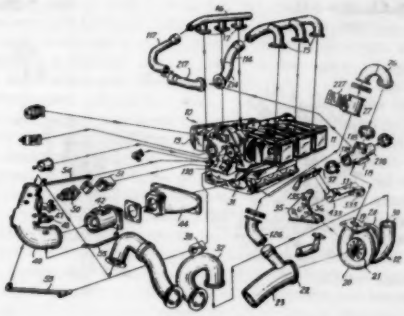
cooling unit conduit means leading from said vaporizer and cooling unit to the inlet compartment of the housing and thence to the fuel mixture engine inlet.

4,469,078

AIRCRAFT ENGINE-TURBOCHARGER PACKAGE WITH BLEED VALVE CONTROL

Stephen R. Speer, S. 358 Coeur d'Alene, Apt. #6; Hugh G. Evans, W. 214 6th Ave., and James S. Christy, E. 10918 26th, all of Spokane, Wash. 99204

Continuation-in-part of Ser. No. 257,864, Apr. 27, 1981,. This application Jul. 10, 1981, Ser. No. 281,944
Int. Cl.³ F02B *37/12*
U.S. Cl. 123—564 **5 Claims**



1. A combination of a compressor and reciprocating internal combustion engine, the combination designed for use on an aircraft, the package comprising an internal combustion, reciprocating engine having propellor governor means, throttle control means for controlling the operating of the engine, an air inlet manifold, and an exhaust manifold; the compressor having an ambient air inlet, and a compressed air outlet; and air flow connecting means between the compressor outlet and the engine inlet; the improvement comprising a variable overboard bleed valve for compressed air, located along the air flow connecting means intermediate the compressor outlet and engine inlet; and valve controller means for controlling the position of the bleed valve and responsive to changes in the engine operating conditions, the valve controller means comprising sensing means to sense movement of the governor means and of the throttle control means, and means for transmitting the movement of the governor and throttle control means to the valve controller comprising first linear movement means operatively connected to the throttle control means and second linear movement means operatively connected to the governor means, movement of the first and second linear movement means being proportional to the movement of the throttle control and governor means, respectively; tying means extending from a first end to a second end transverse to the direction of the first and second linear movement means, the first end of the tying means being connected to the first linear movement means and the second end of the tying means being connected to the second linear movement means, the tying means being capable of linear movement and pivotal movement in response to movement of the first and second linear movement means, such that linear movement of the tying means is the resultant of the combined linear movement of the first and second linear movement means; and means for connecting the tying means to the bleed valve, such that movement of the bleed valve between open and closed positions is controlled by the resultant linear movement of the first and second linear movement means, such that the bleed valve is moved upon the movement of either of the propeller governor or throttle control and in response thereto and maximum performance can be obtained from the engine and compressor over a wide range of engine operating conditions without

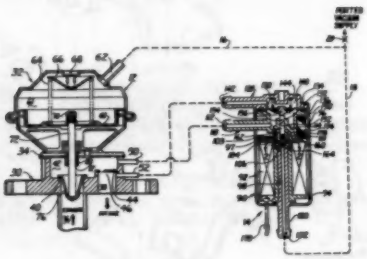
exceeding the critical pressure of the compressor at any engine operating condition, and thus avoiding problems of surge.

4,469,079

EXHAUST GAS RECIRCULATION (EGR) SYSTEM

John E. Cook, Chatham, Canada, assignor to Canadian Fram Limited, Canada

Filed Sep. 30, 1982, Ser. No. 431,979
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **7 Claims**



1. In combination a vacuum actuated EGR pressure regulation system (10) comprising:

an EGR valve (12) adapted to control the EGR flow between the exhaust system and the intake manifold of an engine, the EGR valve (12) defining a controlled pressure chamber (42) between the exhaust system and intake manifold and pressure means for generating and for communicating a pressure difference signal indicative of the EGR flow rate, said pressure means including a first port (50) communicated to the controlled pressure chamber (42) and a second port (52) located downstream of said controlled pressure chamber communicated to said intake manifold, said first port and said second port generating a pressure difference signal indicative of the EGR flow;

electric vacuum regulator means (14) comprising: a housing (90) defining an atmospheric vent (92);

a coil (92) mounted in said housing and responsive to control signals, for generating a magnetic field in proportion to a desired EGR flow;

vent means (100, 102, 104, 106) for defining a valve seat (106) in communication with the controlled pressure chamber and a vacuum supply;

passage means (97, 99, 101, 103) for communicating said atmospheric vent (92) to said valve seat (106);

diaphragm means (130) supported within said hosing defining first and second chambers (114, 140) sealed relative to one another and movable in response to the force differential thereacross;

first means (110) for communicating the intake manifold pressure signal to one of said chambers;

second means (120) for communicating the controlled pressure signal to the other of said chambers;

pin means (154) attached to and movable with said diaphragm means (130) and mounted for engagement with said valve seat (106), said pin means responsive to the magnetic field generated upon energization of said coil (94);

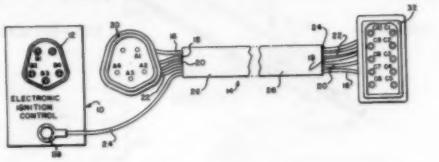
bias means (144) interposing said housing (90) and said diaphragm (130) for biasing said diaphragm relative to said valve seat (106).

4,469,080

IGNITION CONTROL BYPASS CABLE

William R. Brunner, and Donald W. Brunner, both of 3 Eton Dr., North Caldwell, N.J. 07006

Filed Sep. 29, 1982, Ser. No. 427,422
Int. Cl.³ F02P *15/00*
U.S. Cl. 123—595 **5 Claims**



1. An auxiliary ignition control cable for use with a vehicle having an electronic ignition control device including a first external connector means and a spark timing control device adapted to be connected between said first external connector means and a second connector means having connections to engine starting elements including an ignition coil having primary and secondary windings, an ignition switch, a source of direct voltage having a positive terminal and a ground reference, and a distributor having a magnetic pick-up coil, comprising:

a plurality of insulated wire conductors having respective terminals at one end adapted to be connected to mating terminals of said first external connector means and terminals at the other end adapted to be connected to mating terminals of said second connector means, including a pair of wire leads at said one end adapted for connection to a pair of input terminals of said electronic ignition control device and at said other end being adapted for connection to the magnetic pick-up coil of said distributor, said ignition control device including an output terminal, a third wire lead at said one end adapted for connection to a positive voltage supply line of said ignition control device and at the other end being adapted for connection to said ignition switch and positive terminal of said source of direct voltage and one side of said ignition coil, a fourth wire lead at said one end adapted for connection to said output terminal of said ignition control device and at the other end being adapted for connection to the other side of said ignition coil, and a fifth wire lead at said one end adapted for connection to a ground reference of said ignition control device and at the other end being adapted for connection to the ground reference of said source of direct voltage.

4,469,081

IGNITION COIL CONTROL DEVICE FOR REGULATING THE OPTIMAL CONDUCTION TIME FOR AN INTERNAL COMBUSTION ENGINE

Jean-Luc Mate, Toulouse, France, assignor to Renix Electronique S.A., Toulouse, France

Filed Oct. 29, 1981, Ser. No. 316,281
Claims priority, application France, Nov. 4, 1980, 80 23509
Int. Cl.³ F02P *5/08*
U.S. Cl. 123—609 **10 Claims**

1. Ignition coil control device for regulating the optimal conduction time for combustion motor associated with the output stage of an ignition advance calculator having a transfer function of the form:

$$t_{c\ generated} = N \cdot TSD + \epsilon$$

ϵ is a weak and known quantity,

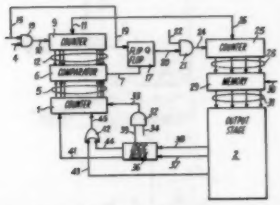
t_c generated is the coil conduction time,

N is the number of angular fractions of periods of an angular reference signal, and

TSD is the period of the angular marking signal corresponding to an angular mark such that a tooth of the crown of

the starter associated with the motor, wherein said device comprises:

means to measure, from data supplied by the calculator, time $t_{c\ measured}$ strictly necessary to obtain the nominal energy at the coil terminals, a first clock of period TH_2, a first counter incremented by the first clock during time $t_{c\ measured}$ up to a number NA so that: $NA = t_{c\ measured}/TH_2$, a second clock of period TH_1, a second counter incremented, at each period TSD of the angular marking signal, by the second clock during a time $t_0 = NB \cdot TH_1$ such that NB=NA, and a third counter incremented during time t_0 by an interpolation signal of period TSD/n up to a number



$$N = \frac{n \cdot t_0}{TSD} = \frac{n}{TSD} \cdot \frac{TH_1}{TH_2} \cdot t_{c\ measured}$$

so that the optimum conduction time calculated by the device is:

$$t_{c\ calculated} = N \cdot TSD = N \cdot \frac{TH_1}{TH_2} \cdot t_{c\ measured}$$

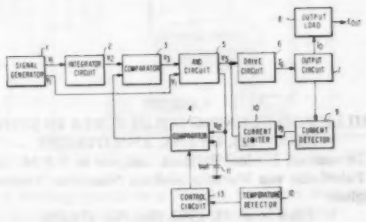
said number N being sent to the output stage of the calculator.

4,469,082

PULSE WIDTH CONTROL CIRCUIT IN WHICH A FEEDBACK AMOUNT IS VARIED DEPENDING UPON AN OPERATING TEMPERATURE

Shigeo Nishitoba, and Hirokazu Fukaya, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,302
Claims priority, application Japan, Jun. 12, 1981, 56-90239
Int. Cl.³ F02P 9/00
U.S. Cl. 123—609 **11 Claims**



1. A combination, comprising means for generating a first signal having a variable cycle period, means for providing a second signal having a predetermined level, means responsive to said first and second signals for producing pulse signals having a predetermined pulse width corresponding to said variable cycle period of said first signal, means for detecting an operating temperature and being responsive to the detected operating temperature to create a detection signal representing that said operating temperature is lower than a predetermined temperature, and means responsive to said detection signal for changing the level of said second signal from said predetermined level to another level, whereby said producing means produces a pulse signal having a pulse width different from said predetermined pulse width when said operating temperature is lower than said predetermined temperature.

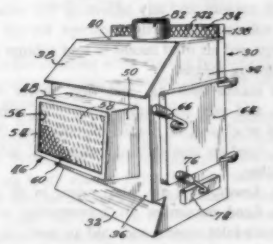
4. An ignition system for an internal combustion engine comprising an input circuit providing an input signal synchronized with the rotation of said internal combustion engine, an ignition coil generating an ignition energy, an output circuit feeding a current through said ignition coil, a feedback circuit producing a feedback signal in response to a current flowing through said ignition coil, a signal supply circuit supplying to said output circuit a signal for controlling a current supply period of time to said ignition coil in response to said input signal and said feedback signal, a detection circuit detecting an operating temperature of said internal combustion engine and producing a detection output, said detection output taking a first value when said operating temperature is lower than a predetermined temperature and a second value when said operating temperature is equal to or higher than said predetermined temperature, and a control circuit increasing the level of said feedback signal from a first level to a second level in response to said first value of said detection output and decreasing said level of said feedback signal from said second level to said first level in response to said second value of said detection output, said current supply period of time to said ignition coil becoming longer than a predetermined period of time in response to said second level of said feedback signal, said current supply period of time to said ignition coil becoming equal to said predetermined period of time in response to said first level of said feedback signal.

4,469,083

WOOD BURNING STOVE

Gordon W. Helle, Farmington; Homer C. Adams, and Richard A. Kleine, both of Peoria, all of Ill., assignors to UNR Industries, Inc., Chicago, Ill.

Filed Jun. 5, 1981, Ser. No. 270,835
Int. Cl.³ F24C 1/14
U.S. Cl. 126—61 **110 Claims**



1. A stove for burning solid fuel comprised of flammable solids that among other things produce one or more flammable gases when heated and burned, said stove having at least two modes of operation, the second mode of operation providing a lower level of combustion than the first, which comprises:

(a) a fire grate for receiving pieces of said solid fuel;

(b) a stove cabinet surrounding said grate and providing (i) a fire chamber above said grate, said fire chamber being defined by said fire grate, generally vertical side walls, and an upper wall, and (ii) an ash collecting space directly beneath said fire grate,

the walls of said stove cabinet defining:

(i) a fuel access opening for depositing said pieces of solid fuel upon said grate,

(ii) first, lower level air inlet means adjacent said fire grate, said first air inlet means having a finite plurality

of predetermined, fixed air transmitting conditions and no other air transmitting conditions, one of said predetermined, fixed air transmitting conditions being a maximum air transmitting condition and one a minimum, said air inlet means providing communication between the air surrounding said stove and said fire chamber adjacent the bottom of said chamber,

(iii) second air inlet means located above said first, lower level air inlet means in a wall of the cabinet that defines said fire chamber, the path by which air flows from outside the stove through said second air inlet means into said fire chamber being entirely separate from the path by which air flows from outside said stove through said first air inlet means into said fire chamber,

(iv) an exhaust outlet opening communicating with the top portion of said fire chamber, and

(v) an ash removal opening communicating with said ash collecting space below the fire grate;

(c) air metering means providing communication at all times between the air surrounding said stove and said second air inlet means, said air metering means having a finite number of predetermined, fixed air transmitting conditions, the first of said predetermined, fixed air transmitting conditions being a maximum air transmitting condition and any predetermined, fixed air transmitting conditions present in said air metering means in addition to said first one allowing the passage of successively smaller amounts of air,

said air metering means including, when at least one of said additional air transmitting conditions is present, preselector means having a finite plurality of predetermined positions available for selection by the user of the stove, movement of said preselector means into one of its said predetermined positions selecting a corresponding one of said finite number of predetermined, fixed air transmitting conditions, said air metering means having no other air transmitting conditions besides said finite number of predetermined, fixed air transmitting conditions so long as said preselector means is placed in no other position than one of its said finite number of predetermined positions,

said stove cabinet and any adjoining fire viewing chamber being substantially airtight except for all the aforesaid openings and air inlet means in said cabinet walls and said air metering means,

said fuel access opening, said first, lower level air inlet means, and said ash removal opening being selectively opened or closed, or placed in their respective predetermined, fixed air transmitting conditions, independently of each other,

said first, lower level air inlet means in its said predetermined, fixed maximum air transmitting condition, said second air inlet means, and said air metering means in its said predetermined, fixed maximum air transmitting condition being of a size to introduce air into said fire chamber for said first mode of operation,

said first, lower level air inlet means in its said predetermined, fixed minimum air transmitting condition, said second air inlet means, and said air metering means in one of its said predetermined, fixed air transmitting conditions being of a size to introduce air into said fire chamber for said second mode of operation; and

(d) covers for

(i) said fuel access opening,

(ii) said first, lower level air inlet means, and

(iii) said ash removal opening, respectively,

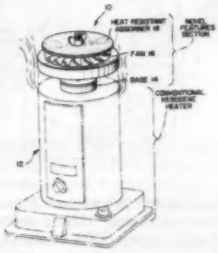
to produce, except for any opening present when said first, lower level air inlet means is in its said predetermined, fixed minimum air transmitting condition, substantially airtight closures of said two openings and said lower level air inlet means.

4,469,084

DEVICE FOR COLLECTING EMISSIONS FROM KEROSENE HEATERS

Nathan J. Gillotti, Danbury, Conn., assignor to Spinair Corp., Danbury, Conn.

Filed May 27, 1983, Ser. No. 499,116
Int. Cl.³ F24C 5/04
U.S. Cl. 126—96 **21 Claims**



1. A device for collecting emissions from a kerosene heater or the like, and for improving the distribution of heated air from such a heater, comprising

base means for locating and supporting said device above the heater, and including a vertical shaft;

spinner means mounted on said shaft for rotation about the axis of said shaft relative to said base means, said spinner means being capable of being rotatably driven about the axis of said shaft by hot air rising from the heater, for causing hot air and combustion gases from the heater to move upwardly in a generally cylindrical column, said spinner means comprising a plurality of fan blades; and

at least one heat-resistant, rotatable, pollutant absorber means mounted on said shaft and spaced above said spinner means for rotation therewith, for collecting polluting emissions from the gases of combustion of the heater.

4,469,085

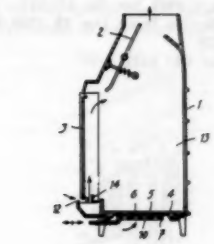
GRILLE FOR BURNING SOLID FUELS IN STOVES, HEARTHS, OVENS, AND OTHERS

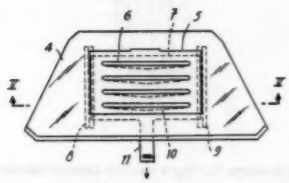
Jean Driesmans, Linden, Belgium, assignor to V.F.M. Verkoop en Fabrikatie van Metaalprodukten Naamloze Vennootscap, Belgium

Filed Mar. 11, 1983, Ser. No. 474,380
Claims priority, application Belgium, May 17, 1982, 59706
Int. Cl.³ F23H 1/02
U.S. Cl. 126—160 **5 Claims**

1. A grille for burning solid fuels in stoves, hearths, ovens and the like, comprising two grille-parts mounted one above the other, one of said grille-parts having oblong passage openings with parallel long sides, the second grille-part having oblong passage openings the width of which increases in the center of the grille-part, one of said grille-parts being fixed, the other of said grille-parts being movable with respect to the one

fixed grille-part in a direction perpendicular to the oblong passage openings of both grille-parts and permitting the passage openings of the other grille-part to close gradually from their ends.



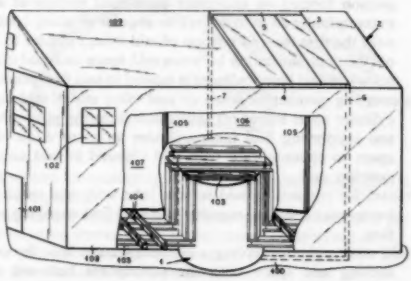


4,469,086

SOLAR HEATED BUILDING STRUCTURE AND METHOD OF OPERATING A SOLAR-HEAT COLLECTOR SYSTEM

Claude Ivorra, Meyzieu, France, assignor to Phenol Engineering Société À Responsabilitée Limitée, Meyzieu, France

Filed Mar. 24, 1983, Ser. No. 478,461
Claims priority, application France, Mar. 24, 1982, 82 05350
Int. Cl.³ F24H *7/00*; E04H *14/00*
U.S. Cl. 126—400 **8 Claims**



6. A heating system for a building having at least one space to be heated by said system, said system comrising:

a cylindrical tank having a vertical axis and formed with an inner concrete wall defining a storage volume, an outer concrete wall surrounding said inner concrete wall and in heat exchanging relationship with said space, and insulating means between said walls for limiting the direct transfer of heat from said inner wall to said outer wall;

heating means for raising the temperature of a fluid connected to said tank for enabling the storage of said fluid in said volume; and

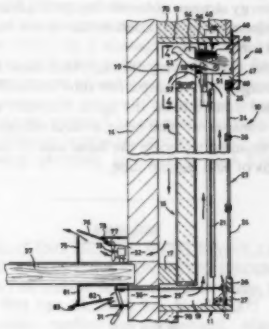
means for circulating fluid drawn from said volume through said outer wall thereby heating the said space, said means for circulating said fluid including at least one tube coil embedded in said outer wall and having an inlet and an outlet opening into said volume, a pump connected to said tube coil and a temperature sensor responsive to said temperature in said space for controlling said pump, said inlet opening at the top of said volume and said outlet opening at the bottom of said volume, said heating means including a solar collector on said building and means for circulating said fluid through said solar collector, said tank being the sole support for said building and being disposed centrally thereof, said insulating means being an evacuatable cellular structure, and is provided with means responsive to the temperature in said space for controlling the degree of evacuation of said cellular structure to enable direct heat transfer from said inner wall to said outer wall.

4,469,087

SOLAR HEATING DEVICE

A. W. W. Cameron, 5 Vanellan Ct., Toronto, Ontario, Canada M8Z 4A5

Filed Mar. 15, 1983, Ser. No. 475,598
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—422 **15 Claims**



1. A device for utilizing solar energy to heat air comprising:

a frame having two side members attached to a top and a bottom member;

a rear wall, which is an exterior wall of a building, attached to the periphery of the frame, the wall being made of material having good heat storage properties;

an insulating body spaced from the rear wall and from the top and bottom members of the frame, being snugly attached within the frame to the two side members;

a solid spacer extending across the device from one side member to the other and engaging the rear wall and insulating body;

means for collecting solar energy positioned in front of and spaced from the insulating body, said solar collecting means also being spaced from the top and bottom members;

a front wall spaced in front of the solar collecting means and attached to the periphery of the frame, said front wall being substantially transparent to allow solar energy access to the solar collecting means; and

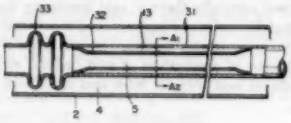
circulation means for introducing unheated air into the device and for removing heated air from the device while promoting the circulation of air in the device around the insulating body so that the unheated air moves initially along the solar collecting means and then as heated air moves along the rear wall thereby delivering a portion of the derived heat to the wall.

4,469,088

SOLAR COLLECTOR

Shunichi Anzai, Hitachi, and Takeshi Sakamoto, Ibaraki, both of Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,153
Claims priority, application Japan, Mar. 6, 1981, 56-31138
Int. Cl.³ F24J 3/02
U.S. Cl. 126—436 2 Claims



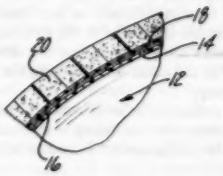
1. A solar collector comprising:
a double tube comprising a round and straight outer tube, and a fluted inner tube having a wave-like cross-sectional configuration and coaxially disposed within said outer tube, the wall thickness of said outer and inner tubes being uniform over their length and the apexes of the wave-like form cross-section of said inner tube contacting the inner surface of said outer tube,
a thermal energy storage material changeable from a solid to a liquid phase being enclosed in the space between said outer and inner tubes,
a heat transfer fluid flowing through said inner tube,
a round, straight and transparent tube coaxially disposed around said double tube, the space between said double tube and transparent tube being evacuated, and
a reflector mounted to locate the focal axis of said reflector on the axis of said double tube.

4,469,089

LIGHTWEIGHT, LOW COST RADIANT ENERGY COLLECTOR AND METHOD FOR MAKING SAME

Paul O. Sorko-Ram, 1111 N. Centerville, Sturgis, Mich. 49091

Filed Feb. 2, 1982, Ser. No. 345,263
Int. Cl.³ F24J 3/02
U.S. Cl. 126—438 10 Claims



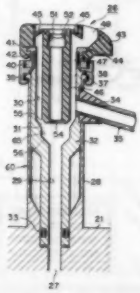
1. A concave, radiant energy collector, consisting of:
a concave sheet of flexible thermoplastic material substantially transparent ot said radiant energy;
a coating of reflective material vapor deposited on the convex side of said sheet; and
a structurally supporting layer of foamed resin on said reflective layer, said layer of foamed resin possessing sufficient rigidity to support said concave sheet and said reflective coating.

4,469,090

SUCTION CONTROL DEVICE FOR AN ENDOSCOPE

Yutaka Konomura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1981, Ser. No. 327,512
Claims priority, application Japan, Dec. 19, 1980, 55-180228; Dec. 19, 1980, 55-180229
Int. Cl.³ A61B 1/00
U.S. Cl. 128—4 8 Claims



1. In an endoscope having a suction control device for selectively connecting a passageway and a suction tube of said endoscope, comprising:
a control device having a channel;
an outer cylinder connected with said channel at one end thereof and having an opening at the other end thereof to and communicating with the atmosphere;
an inner cylinder having two faced; said cylinder open at either end face thereof and inserted in and coupled to said outer cylinder so as to have one end thereof located inside said outer cylinder and being movable longitudinally between a first position and a second position, a space being defined between an outer peripheral surface of said inner cylinder and an inner peripheral surface of said outer cylinder;
a first engaging portion including a first tapered portion formed on one end face of said inner cylinder;
a second engaging portion means including a second tapered portion formed on said inner peripheral surface of said outer cylinder so as to come into angular abutting contact with the first tapered portion of said inner cylinder to cut off the communication between said space and said channel when said inner cylinder is moved to said first position;
a coupling member disposed on said other end of said outer cylinder so as to cut off said space from the atmosphere and supporting said inner cylinder so as to allow said space to communicate with said channel in said second position; and
means for connecting said suction tube with said space between said coupling member and said first engaging portion,
said outer cylinder having a communication hole for connecting said space with the atmosphere between said coupling member and said first engaging portion.

4,469,091

TACTILE CONTROL DEVICE FOR A REMOTE SENSING DEVICE

Charles A. Slanetz, Jr., 10 Tayer Rd., Locust Valley, N.Y. 11560

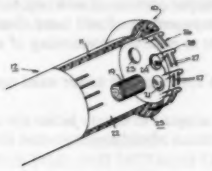
Division of Ser. No. 182,071, Aug. 28, 1980, Pat. No. 4,366,810. This application Sep. 9, 1982, Ser. No. 416,259
Int. Cl.³ A61B 1/06
U.S. Cl. 128—6 20 Claims

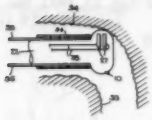
1. In combination with a fiberscope including an elongated flexible insertion tube, an illuminating and viewing system

mounted at a distal end of said tube and a control unit for bending said tube at said distal end in two planes;

a tactile control device including

a flexible hood circumferentially surrounding said illuminating and viewing system at said distal end, said hood projecting forwardly of said distal end; and





a plurality of sensing devices disposed circumferentially on said hood forward of said distal end, said sensing devices being responsive to an inward flexing of said hood to emit a signal indicative of the location of a flexed section of said hood.

4,469,092

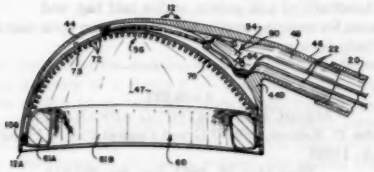
SCALP STIMULATING SYSTEM

Walter D. Marshall, and James W. Garrison, Jr., both of 20515 Aldine - Westfield #77, Humble, Tex. 77338

Filed Sep. 27, 1982, Ser. No. 424,070

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—36 **5 Claims**



1. A system for massaging and treating the human scalp, said system comprising:

helmet means adapted to be placed upon the head of a patient to be treated, said helmet means comprising:

a rigid, substantially hollow shell means greater in size than the head of the patient;

separate pad means disposed within said shell means and including a plurality of resilient, spaced apart integral finger members adapted to directly contact the scalp of the patient;

vibration means disposed within said helmet means between said shell means and said pad means for vibrating said pad means to massage the patients scalp, said vibration means comprising:

vibration generating motor means; and,

a plurality of spaced apart vibration transmitting fingers projecting from said vibration motor means in to physical contact with said vibration pad means;

means for supplying vacuum to said shall means; and,

control means for actuating said vacuum means and said vibration generating motor means.

4,469,093

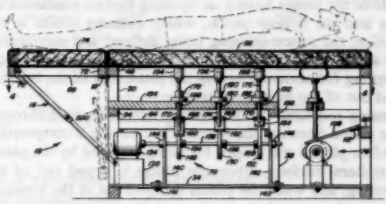
RELAXING MASSAGER

Charles Chaplar, El Paso, Fla., assignor to Christiana Optical Company, Naples, Fla.

Filed May 12, 1982, Ser. No. 377,672

Int. Cl.³ A61H *7/00*

U.S. Cl. 128—52 **9 Claims**



1. A massage table comprising:

frame support means; and

massaging means supported by said frame support means and including massage assembly means,

said massage assembly means including massaging member means for effecting a massaging action to an individual reclining on said massage table, cam means for effecting a desired movement of said massaging member means, and follower means for transmitting said movement between said massaging member means and said cam means, said follower means comprising lifter bar means, said lifter bar means being pivotally attached to said frame support means.

4,469,094

SKIN MASSAGING DEVICE WITH SIMULTANEOUS APPLICATION OF A COSMETIC PRODUCT

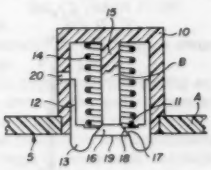
Charles Kaeser, 18, chemin de Rennier, 1009 Pully, Switzerland

Filed Apr. 21, 1982, Ser. No. 370,377

Claims priority, application Switzerland, May 4, 1981, 2872/81

Int. Cl.³ A61H *9/00*

U.S. Cl. 128—65 **11 Claims**



1. Skin massage device with simultaneous application of a cosmetic product, the device comprising:

a reservoir for containing cosmetic product;

a massaging surface integral with and facing out from the reservoir, the massaging surface carrying a plurality of outwardly facing protuberances thereon which are adapted to exert massaging action while the massaging surface is moved over the skin;

a first plurality of first protuberances being for application of the cosmetic product; an orifice through the massaging surface at each first protuberance for escape therethrough of cosmetic product in the reservoir; the each first protuberance having an extended position at which the first protuberance blocks the orifice and also having a re-

tracted position for opening the orifice, and the each first protuberance being movable to the retracted position upon application of pressure to the first protuberance through massaging the skin with the massaging surface;

each first protuberance of the first plurality comprising:

a hollow housing communicating into the reservoir, the hollow housing being defined by a peripheral wall; a hollow piston partially projecting into and contained within the housing and being shaped to be slidably movable along the housing wall; the hollow piston having a side facing outwardly of the massaging surface and that side of the piston having an opening therein communicating into the hollow piston, which opening serves as the orifice; the piston opening being defined and surrounded by a peripheral surface in the outwardly facing piston side; a spring for normally urging the piston out of the housing and out of the massaging surface;

a housing rod fixed on the housing and projecting through the piston opening; the housing rod having a cooperating surface placed and shaped for being engaged by the piston peripheral surface, when the piston is urged out of the housing, and when the piston is urged out of the housing, this is the extended position of the protuberance; the peripheral surface of the piston and the cooperating surface of the housing rod being engageable for sealing both the piston opening and the protuberance orifice against passage of the cosmetic product; the cooperating surface being placed so that with the piston pushed into the housing in the retracted position of the protuberance, the peripheral surface is separated from the cooperating surface for opening the piston opening and the protuberance orifice for passage of cosmetic product then in the housing;

a second plurality of second protuberances which are fixed to the massaging surface and are not retractable and do not include an orifice for escape of cosmetic product.

4,469,095

MEDICAL SLEEVE

Olivia H. Herrera, P.O. Box 1312, Pueblo West, Colo. 81002

Filed Dec. 28, 1982, Ser. No. 438,025
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—65 **6 Claims**

1. A medical sleeve adapted to jacket either arm of a user comprising:

an integral elongated tubular seamless length having an upper portion, a lower portion, and a cap portion;

said tubular length fabricated of continuous woven elastic knitted material and adapted to fit snugly over the user's entire arm;

said cap portion adjacent the upper end of said upper portion;

said lower portion adjacent the lower end of said upper portion and having a wrist portion;

said cap portion forming said sleeve upper opening, said upper opening generally perpendicular and offset from the overall axis of said tubular length and adapted to receive and snugly fit over the user's shoulder and armpit;

a length of elastic band connected at one end to the upper portion of said cap portion; and

intercooperating fastening means on the distal end of said band and said upper portion of said cap portion adapted for releasable engagement of said band about the brazier strap of the user to maintain positioning of said sleeve on the user's arm;

said wrist portion forming said lower axial opening of said sleeve;

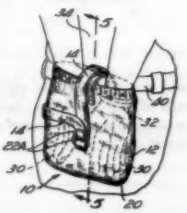
said wrist portion adapted to snugly jacket the user's wrist to maintain the position of said lower portion along the user's arm.

4,469,096

SUPPLEMENTAL HAND RESTRAINT DEVICE

Ricky R. Rivadeneyra, San Clemente, Calif., assignor to Soft Cell Products, San Clemente, Calif.

Filed Aug. 23, 1982, Ser. No. 410,716
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—133 **9 Claims**



1. A supplemental hand restraint device comprising:

a bag adapted to receive the hands and handcuffs of an in-custody person therein;

an opening formed on end of said bag sized to permit said bag to be extended over the hands and handcuffs of said in-custody person to a position enclosing the hands and handcuffs of said person within said bag; and

means for securing said bag in said position upon said in-custody person.

4,469,097

MEDICAL BREATHING APPARATUS

Charles D. Kelman, 269-70 Grand Central Pkwy., Floral Park, N.Y. 11005

Filed May 25, 1982, Ser. No. 381,919
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.22 **8 Claims**

1. Medical breathing apparatus comprising:

a surgical mask;

a container for pressurized gas;

means for coupling said surgical mask to said container; and

valve means automatically opened periodically by the pressurized gas in said container for repeated short intervals of time separated by longer intervals of time for dispensing gas in bursts from said container to said surgical mask, whereby said short and longer intervals of time are determined by said valve means independently of the breathing cycle of the wearer of the mask.

4,469,098

APPARATUS FOR AND METHOD OF UTILIZING ENERGY TO EXCISE PATHOLOGICAL TISSUE

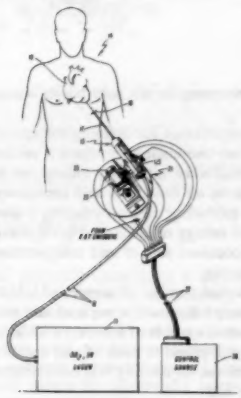
Samantha K. Davi, 4620 N. Park Ave., Apartment 1408 West, Chevy Chase, Md. 20015

Continuation-in-part of Ser. No. 970,132, Dec. 18, 1978, Pat. No. 4,266,548. This application May 5, 1981, Ser. No. 260,808

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **41 Claims**



1. An instrument for excising pathological tissue from an organ in a cavity of a living body comprising a source of coherent optical beam radiation having sufficient energy to vaporize the tissue, a cannula having a biocompatible exterior made of a material that can be inserted into the body cavity in contact with organs in the cavity without detrimental effects on the organs, said cannula having a longitudinal axis and an optically transparent interior extending along the axis, the transparent interior being bounded by an interior wall of the cannula, means for optically coupling the beam source to the cannula so energy from the beam is coupled to the tissue so the tissue is irradiated by the beam energy, the optical coupling means including an optical waveguide connected to be responsive to the beam, the waveguide being fabricated of a material that remains stable while transmitting the beam so that the beam mode is not perturbed as the beam propagates through the waveguide, the beam energy irradiating the tissue having sufficient energy to vaporize the irradiated tissue, the cannula being made of a material that substantially prevents heat transferred to the interior wall by radiation from the beam from being transferred to the exterior of the cannula so that organs in the body cavity contacting the cannula exterior are not substantially heated by radiation from the beam, means for selectively coupling the beam to the cannula, means for gyrating the beam irradiating the tissue about the longitudinal axis.

4,469,099

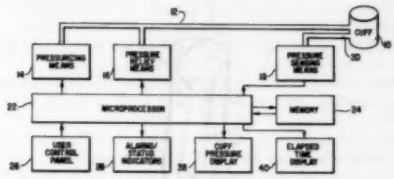
PNEUMATIC TORNIQUET

James A. McEwen, Richmond, Canada, assignor to Western Clinical Engineering Ltd., Vancouver, Canada

Continuation of Ser. No. 193,145, Oct. 2, 1980, abandoned. This application Dec. 20, 1982, Ser. No. 451,610

Int. Cl.³ A61B *17/12*

U.S. Cl. 128—327 **11 Claims**



9. A pneumatic tourniquet, comprising:

an inflatable cuff;

pressurizing means for pressurizing said cuff;

pressure relief means for depressurizing said cuff;

pressure sensing means for measuring and providing an output signal representative of the pressure to which said cuff is pressurized;

selectable reference pressure signal means for producing a reference signal representative of a selected reference pressure to be applied to said cuff;

pressure regulator means responsive to said reference signal for activating said pressurizing means and said pressure relief means to regulate said cuff pressure, said pressure regulator means being characterized in that it is operable to maintain said cuff pressure within a preassigned operational pressure tolerance window in association with a first selected reference pressure and to shift said pressure tolerance window in response to a change to a second selected reference pressure to maintain said cuff pressure within said pressure tolerance window in association with said second selected reference pressure.

4,469,100

INTUSSUSCEPTING BALLOON CATHETER FOR STONE EXTRACTION

Charles W. Hardwick, 112 Crystal View South, Sanford, Fla. 32771

Filed Mar. 14, 1983, Ser. No. 474,796

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—328 **13 Claims**

1. A balloon catheter for extracting a ureteral stone from a ureter comprising:

an outer flexible cylindrical tube having an open distal end for insertion into a ureter and a connection thereto at the proximal end of said outer tube;

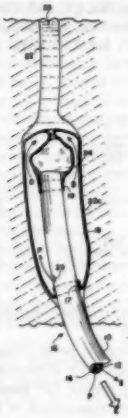
an inner flexible tube within and coextensive with said outer tube and having a common wall therewith, said inner tube closed at its distal end, having an orifice adjacent its distal end through said common wall, and having a connection thereto at the proximal end of said outer tube;

an elongate distensible elastic sleeve disposed concentrically with said outer tube having a distal end folded inward for a distance sufficient for attaching said sleeve distal end circumjacent to the distal end of said outer tube and a proximal end portion folded inward to thereby form an extended reentrant portion, the proximal end of said reentrant end portion attached circumjacent to said outer tube below said orifice;

means for selectively applying pressure to said connection of said inner tube after said outer tube is inserted into a ureter for inflating said elastic sleeve for dilating said ureter to a diameter greater than a stone in said ureter; and

said elastic sleeve is adapted to have its outer wall friction-

ally engaged with the wall of said ureter when inflated to initially remain stationary upon withdrawal of said outer tube from said ureter, said distal end of said sleeve thereby



unfolding and intussuscepting to capture and substantially enclose a stone whereby further withdrawal of said outer tube withdraws said inflated elastic sleeve for extraction of said stone from said ureter.

4,469,101

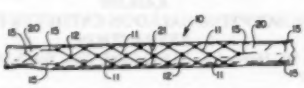
SUTURE DEVICE

Carl R. Coleman, Powell, and Kenneth E. Hughes, Gahanna, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 199,715, Oct. 23, 1980, abandoned. This application Jun. 7, 1982, Ser. No. 385,699

Int. Cl.³ A61B *17/04*; A61F *1/00*

U.S. Cl. 128—334 R **7 Claims**



1. A tendon suture device for repair of lacerated tendons by approximating the lacerated ends of the tendon, comprising:

a. An uncovered open network defining a hollow projection of a tubular form constructed of interconnected oppositely turned helices of non-toxic tissue receptive intersecting flexible non-elastic nonrigid members extending between opposite ends formed to receive opposing and approximated ends of a lacerated tendon, the members being anchored one to another at their ends and at their intersections, the openness of the network being of greater area than the area covered by the members on the projection of tubular form;

b. the suture being operably strong enough to carry the tendon load when in place on a tendon, with the tendon within the tubular form of the suture device, and with the host tissue surrounding the tendon and suture device, to permit only slight movement between the host tissue surrounding the tendon and relatively no movement between the approximated ends of the lacerated tendon;

c. the openness being further characterized to permit development of relatively long adhesions between the tendon and the host tissue through the interstices of the open network during the healing process between the ends of the lacerated tendon.

4,469,102

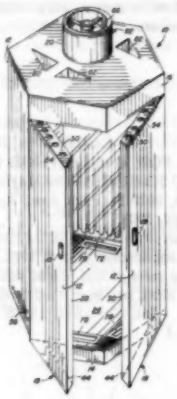
SUNTANNING BOOTH

Errol R. Fish, 590 N. 96th St., Mesa, Ariz. 85207

Filed Dec. 24, 1980, Ser. No. 219,916

Int. Cl.³ A61M *33/00*

U.S. Cl. 128—395 **12 Claims**



1. A suntanning booth, said booth comprising in combination:

(a) a compartment for defining the space for an occupant;

(b) at least one enclosure adjacent said compartment, each said enclosure including means for inhibiting an interchange of air flow with said compartment;

(c) said inhibiting means including a shield transmissive to radiant energy of UVA and UVB wave lengths for defining a common side of said compartment and each of said enclosures;

(d) a selected number of sources of UVA wave length radiant energy disposed in each of said enclosures;

(e) a selected number of sources of UVB wave length radiant energy disposed in each of said enclosures;

(f) first means for cooling said compartment with a first flow of air; and

(g) second means for cooling each of said enclosures with a second flow of air, the path of said second flow of air through each of said enclosures being segregated from the path of said first flow of air by at least said inhibiting means.

4,469,103

METHOD OF TREATING CONDITIONS SUCH AS TUMORS IN LIVING BODIES

Harold F. Barrett, Rte. 1, Box 262A, London, Ark. 72847

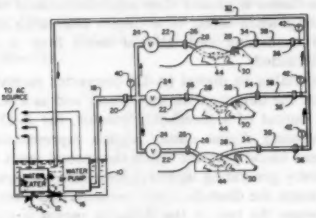
Filed Mar. 3, 1982, Ser. No. 354,361

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—400 **20 Claims**

1. A method of treating a condition in a living body that is produced by defective cells comprising applying to an area of the body containing the defective cells localized infrared electromagnetic energy having a wavelength such that the energy is absorbed by the defective cells, the energy being derived from a flowing fluid having a temperature within the normal operating temperature range of the body and the wavelength

of the energy being determined by said temperature, and adjusting the amplitude of the energy, by adjusting the flow rate



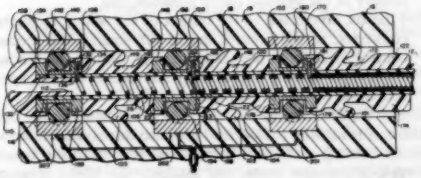
of the fluid, to a value that is effective to substantially destroy defective cells without substantially destroying healthy cells.

4,469,104

MULTIPOLAR CONNECTOR FOR PACING LEAD

Charles A. Peers-Trevarton, Coral Springs, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jul. 16, 1982, Ser. No. 399,062
Int. Cl.³ A61N *1/00*
U.S. Cl. 128—419 P **9 Claims**



1. A pacing lead assembly comprising a multiconductor pacing lead and a connector assembly surrounding the proximal end of said multiconductor pacing lead, said multiconductor pacing lead having said proximal end and a distal end and including at least two wire conductors within a sheath of insulating material, and said connector assembly including at least one metal band, means for electrically connecting one wire conductor to said one metal band, insulating means on either side of said metal band, a resilient conductive ring resiliently received on said band for electrically connecting said metal band to a metal ring in a socket in a pulse generator into which said connector assembly is inserted, and said band comprising means for retaining said resilient conductive ring in place on said metal band and for preventing said ring from being moved axially off of said metal band on relative movement between said connector and the socket.

4,469,105

MEDICAL ELECTRODE APPARATUS AND KIT OF COMPONENTS THEREFOR

Peter J. Staver, Lincoln Park, Mich., assignor to Clinton Meyering, Southgate, Mich.

Filed Jun. 18, 1981, Ser. No. 274,825
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—643 **9 Claims**

1. A medical instrumentation electrode apparatus, comprising:

a substantially rigid vacuum bell fabricated of a substantially rigid electrically-conductive material, said vacuum bell having a hollow inner chamber formed therein;

first means for creating a partial vacuum in said inner chamber of said vacuum bell;

second means for selectively electrically connecting said vacuum bell to an external medical instrument;

third means for operably connecting said first means with said vacuum bell such that said first means communicates with said inner chamber of said vacuum bell;

said inner chamber of said vacuum bell including a lower open end portion defined by a lower peripheral wall portion of said vacuum bell;

a substantially annular-shaped electrically-conductive member supported by said lower peripheral wall portion, said annular-shaped member providing a secure holding electrical contact with a patient's skin upon evacuation of said vacuum bell by said first means; and

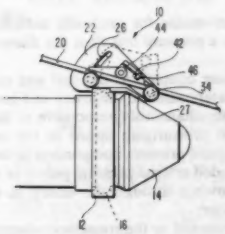
fourth means for securing said annular-shaped electrically-conductive member to said lower peripheral wall portion in downwardly-depending relation thereto.

4,469,106

NEEDLE GUIDE FOR USE WITH MEDICAL ULTRASONIC SCANNING APPARATUS

Norio Harui, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 414,141, Sep. 2, 1982, abandoned. This application Oct. 12, 1982, Ser. No. 433,931
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **16 Claims**



1. An adjustable needle guide for use with a medical ultrasonic scanning apparatus comprising:

(a) A mounting plate including means for attachment to an ultrasonic scanning apparatus;

(b) A pivoting plate, pivotally mounted on said mounting plate, whereby said pivoting plate can be moved in the plane of the ultrasonic scan, said pivoting plate including means for locking said pivoting plate in a fixed angular position on said mounting plate;

(c) At least one needle aligner mounted on said pivoting plate, said at least one needle aligner being adapted to slideably hold a needle which is biased against said needle aligner;

(d) An idler plate which is pivotally mounted on said pivoting plate, said idler plate including an adjustable needle diameter biasing means; and

(e) Spring means which biases said idler plate to move said

adjustable needle diameter biasing means toward said at least one needle aligner on said pivoting plate, whereby a needle placed between said at least one needle aligner and said adjustable needle diameter biasing means is biased toward said at least one needle aligner by said spring means.

4,469,107

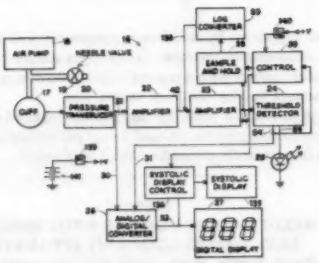
AUTOMATIC BLOOD PRESSURE MEASUREMENT DEVICE WITH THRESHOLD COMPENSATION CIRCUITRY AND METHOD FOR PERFORMING THE SAME

Raymond A. Asmar, 1 Fairmont Dr., Danbury, Conn. 06810, and John Canavan, Bee Brook Rd., Washington Depot, Conn. 06794

Continuation-in-part of Ser. No. 9,377, Jan. 2, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 269,511

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—681 **10 Claims**



1. A blood pressure measurement device comprising:

(A) an inflatable cuff positionable about a user's limb and pressurizable so as to temporarily stop the flow of blood of the artery constricted by the cuff;

(B) means for pressurizing the cuff so as to produce a pressure within the cuff to totally occlude blood flow through the artery;

(C) means, activatable for gradually deflating the pressurized cuff to a pressure less than the diastolic pressure of the artery;

(D) a transducer coupled to the cuff and positioned to be placed in juxtaposition to the artery and having an electrical output simultaneously responsive to the pressure applied by the pressurizing means to the cuff and to the fluctuating pulse pressure components in the cuff pressure due to occluded arterial pressure pulses or to the presence of blood flowing through the artery in a partially occluded manner;

(E) means connected to the transducer electrical output for only passing the fluctuating pulse pressure components of the electrical output;

(F) means connected to the fluctuating pulse pressure components output means, for electrically amplifying the fluctuating pulse pressure components;

(G) means, coupled to the output of the amplifying means, operative by a first control pulse, for sampling and holding the electrical output from the amplifying means upon receipt of the first electrical pulse;

(H) a compensation circuit, connected to the output of the sample and hold means for modifying the electrical output of the sample and hold means so as to diminish the amplitude of the output as a function of the output signal, the output of the compensation circuit connected to the amplifying means so as to effectively reduce the output of the amplifying means as a function of the compensation circuit output;

(I) a threshold detector, connected to the amplifying means output for enabling the output of the detector during initial inflation of the cuff when the sample and hold means is inoperative and when the amplified fluctuating pulse pressure components as modified by the compensation means is greater than a predetermined value representing when blood flow begins after arterial occlusion and continuing until arterial blood flow is completely unoccluded;

(J) an analog to digital (A-D) converter receiving as one input the output of the transducer and as a second input the output of a threshold detector, the A-D converter generating digital output signals representative of the sensed blood pressure when the second input is enabled; thereby generating signals representing the systolic blood pressure, the diastolic blood pressure, and blood pressures between the two as the deflating means is operative, as well as for indicating the cuff pressure during initial inflation of the cuff by the pressurizing means;

(K) a first display connected to the digital output signal of the A-D converter for generating a visual display of each output of the A-D converter and thereby maintaining the diastolic blood pressure reading upon termination of the threshold detector output signals;

(L) means, connected to the output of the threshold detector and energizable after initial cuff inflation, for generating the first control pulse and for generating at least a second control pulse when the threshold detector output is first generated after the first control pulse is generated;

(M) a second display for generating a digital output visual display of the systolic blood pressure; and

(N) means, connected to the output of the analog to digital converter, to the control means for sensing the second control pulse from the control means, and to the second display, for storing and driving the second display upon activation by the second control pulse;

whereby the first display shows the blood pressure in the cuff as the cuff is initially pressurized and also displays each blood pressure reading as the cuff pressure is reduced to and below the systolic pressure point, and latching the blood pressure reading upon receipt of the diastolic blood pressure; and wherein the second display shows the systolic blood pressure and maintains this reading until the unit is de-energized.

4,469,108

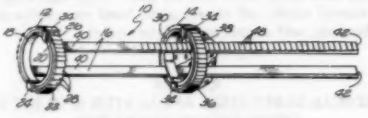
DEVICE FOR MEASURING PENILE TUMESCENCE AND RIGIDITY

Abraham M. B. Goldstein, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Filed Aug. 4, 1982, Ser. No. 405,134

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—694 **19 Claims**



1. A device for measuring tumescence and rigidity of the penis during erection comprises:

first means receivable about the base of the penis and actuable from an initial condition to an expanded condition by tumescence of the penis;

second means mountable to a portion of the penis remote from the base thereof for movement essentially with said portion of the penis; and

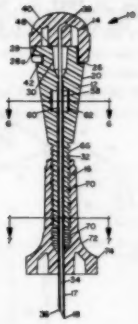
means for connecting the second means to the first means in a manner permitting movement of the second means away from the first means in response to the erection, said connecting means comprising an elongated element extending outwardly from the first means to the second means alongside the penis.

4,469,109

BONE MARROW ASPIRATION NEEDLE

Donald N. Mehl, Minnetonka, Minn., assignor to Creative Research and Manufacturing Inc., Minnetonka, Minn.

Filed Dec. 24, 1981, Ser. No. 334,427
Int. Cl.³ A61B 10/00
U.S. Cl. 128—753 5 Claims



1. Needle comprising:

a. cannula member, said cannula member including a tubular cannula, a cannula clip fixedly secured on an upper portion of said tubular cannula and having two opposing ears extending substantially angularly outward therefrom, a lower end of said tubular cannula including a hollow-ground beveled knife-sharp edge angle, a molded housing formed thereabout of said tubular cannula wherein said opposing ears are permanently embedded in said molded housing to prevent said cannula member from rotation with respect to said molded housing, two hand wings extending from an upper portion of said molded housing, said molded housing including a threaded lower portion, a button extending outwardly from an upwardly extending vertical member including a rim, the vertical member being of reduced diameter with respect to said molded housing and extending therefrom, and an angled chamber of reduced diameter extending through said vertical member to a top of said tubular cannula;

b. stylet member including a stylet having an upper angled end for securing and an other end including a hollow-ground beveled knife-sharp angle, a stylet cap molded about said angled end of said stylet, and including a spring detent locking groove for engaging under and about said button of said cannula in a detent locking mode, an interior bore of a height to engage about and with said vertical member of said cannula and engaging on said rim of said cannula member; and

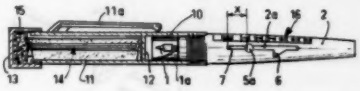
c. threaded depth stop means including a knurled circumference and plurality of digitory sockets formed about an upper edge of said knurled circumference, and a threaded inner portion for adjustment over said lower threaded portion of said cannula member whereby said stylet of said stylet member is pushed through said tubular cannula and protruding beyond the end of the tubular cannula where the end of said tubular cannula and the stylet are in predetermined oriented relationship when said detent locking groove spring on twisting engages and locks with said button of said cannula and said detent locking groove of said stylet cap providing said respective orientation of said knife-sharp edges, said depth stop is adjustable on said threaded lower portion of said cannula providing for proper penetration of said cannula and said stylet during biopsy whereupon the stylet is removed and a syringe is inserted therein for the drawing of bone marrow up through said tubular cannula to said syringe.

4,469,110

DEVICE FOR CAUSING A PINPRICK TO OBTAIN AND TO TEST A DROP OF BLOOD

Gérard J. Slama, 17, Av. du Chateau, 94210 La Varenne Saint Hilaire, France

Filed Jun. 17, 1982, Ser. No. 389,393
Claims priority, application France, Jun. 25, 1981, 81 12458
Int. Cl.³ A61B 17/34
U.S. Cl. 128—770 4 Claims



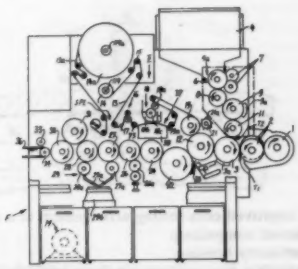
1. A device for causing a pin prick to obtain and test a drop of blood comprising an elongated body in the general shape of pen and having an open end, pricking means within said body for causing a pin prick from said open end of said body and drawing a drop of blood, a removable cap closing said open end of said body and a defining a receptacle within said cap, said receptacle having an opening therein and being adapted to retain therein a strip of the type for receiving by capillary action a drop of blood, a removable tip closing said receptacle and comprising a housing communicating with said receptacle adapted to receive and retain a desiccant material.

4,469,111

APPARATUS FOR PERFORATING WEBS OF WRAPPING MATERIAL FOR TOBACCO OR THE LIKE

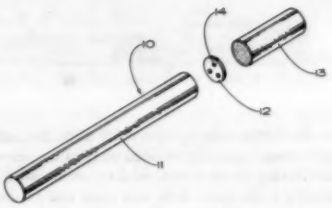
Peter Pinck, Gross-Hansdorf, and Elke Köhler, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 254,527, Apr. 15, 1981, abandoned. This application Aug. 20, 1981, Ser. No. 294,815
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015912; Jul. 10, 1981, 3127213
Int. Cl.³ A24C 5/00, 5/60
U.S. Cl. 131—281 64 Claims



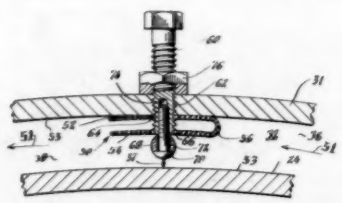
1. Apparatus for making holes in a sheet-like material, particularly in a running web of wrapping material for rod-shaped articles which constitute or form part of smokers' products, comprising at least one perforating unit having at least one source of coherent radiation arranged to furnish at least one beam of coherent radiation and means for making holes in the sheet-like material including means for focusing the beam upon the sheet-like material with attendant development of contaminants and the tendency of such contaminants to accumulate in the space accommodating and surrounding said unit; and means for conveying at least one stream of gaseous fluid through said space so that the conveyed fluid entrains and removes contaminats from such space.

4,469,112
COMPOUND FILTER
Colin L. Browne, Clover, S.C.; Charles H. Keith, and Peter J. Bohlander, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.
Continuation of Ser. No. 185,058, Sep. 8, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,273
Int. Cl.³ A24D 3/04
U.S. Cl. 131—336 7 Claims



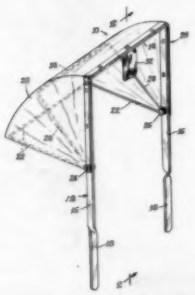
1. A ventilated cigarette filter suitable for attachment to a tobacco column, said ventilated filter having an initial totally encapsulated pressure drop of at least 90 mm. H_2O including a barrier of a smoke impervious material positioned upstream and in abutting relationship with at least one filter segment, the barrier permitting the passage of smoke from a tobacco column to said filter rod by means of at least one passageway extending through said barrier, the total cross-sectional passageway area being from 1.9 to 2.5 square millimeters, whereby on smoking, tar buildup downstream of said barrier produces increasing encapsulated pressure drop and substantially constant tar and nicotine delivery as the cigarette is smoked, said pressure drop buildup being reduced by said ventilation.

4,469,113
COIN PROCESSING APPARATUS
William L. Gunn, Atlanta, and Thomas Preacher, Jr., Marietta, both of Ga., assignors to Brink's Inc., Darien, Conn.
Filed Mar. 2, 1983, Ser. No. 471,359
Int. Cl.³ G07D 3/06
U.S. Cl. 133—3 E 10 Claims



1. An improved coin sorting arrangement in a coin processing apparatus comprising:
a. a stationary housing;
b. a rotatably mounted sorting drum positioned within said housing for rotation therein;
c. said drum including a plurality of apertures formed therein for receiving and seating coins;
d. means including said drum and housing for forming an annular shaped air chamber between said drum and housing;
e. an elongated baffle means positioned in said chamber;
f. said baffle means extending along a length of said housing and forming with said drum a constriction in said chamber;
g. said baffle means having an adjusted cross-sectional configuration which is expandable to reduce the size of said constriction and is retractable to enlarge the size of said constriction and, means for adjusting the cross-sectional configuration of said baffle means from a location outside of said housing.

4,469,114
CANOPY-REMOVABLE, PORTABLE
Orville Kelley, and Vicki Kelley, both of P.O. Box 356, Jeffrey City, Wyo. 82310
Filed Sep. 29, 1982, Ser. No. 427,993
Int. Cl.³ E04B 1/347
U.S. Cl. 135—102 2 Claims



1. A removable and portable canopy adapted for covering a display in spaced relation above the display, comprising,
a main frame of generally U-shape, having a top cross element and depending legs, the legs continuing downwardly into and including terminal elements at their free lower ends which continue longitudinally from the legs and form stakes adapted to be driven into the ground, the frame having a back side determining essentially a plane, the top cross element and depending legs having broad dimension perpendicular to that plane and the stakes having broad dimension in direction parallel with that plane, and
a shield including U-shape bows and a flexible sheet thereon, the bows being pivotally mounted on the main frame on only the front side of the latter, at a position above said stakes and swingable between a spread attitude, in which a lower one of the bows is adjacent and perpendicular to the main frame, and a folded attitude in which the bows and sheet are compacted closely against the main frame, the main frame being relatively great in size and strength, and the bows of the shield being relatively small, and the main frame thereby being capable of entirely supporting the shield,
all parts of the canopy being disposed forwardly of said back side plane in all attitudes of the canopy,
the canopy being adapted to be mounted by driving the stakes into the ground, and the stakes thereby supporting the main frame and thus the canopy,
the perpendicular positioning of the lower bow and its positioning above the stakes, determining the positioning of the shield above the ground in response to the stakes being driven into the ground, whereby a display under the shield is accessible from the exterior of the canopy.

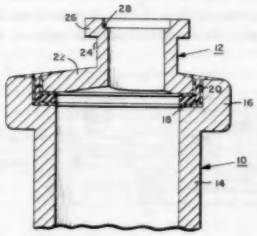
4,469,115
EXTENDED VALVE BOX AND PROCESS FOR SECURING EXTENSION TO VALVE BOX
Gary B. Rockafellow, West Chester, Pa., assignor to Bonded Products, Inc., West Chester, Pa.
Filed Feb. 11, 1983, Ser. No. 465,728
Int. Cl.³ F16L 5/00
U.S. Cl. 137—15 12 Claims

1. An extended valve box resistant to traffic, corrosion moisture and temperature fluctuations comprising a valve box

having a cover-retaining shoulder and a cover-retaining ring, and an extension vertically supported by said shoulder and held against horizontal translation by said cover-retaining ring, characterized by a layer of adhesive on said shoulder, a layer of adhesive on the area of the extension facing the shoulder, a flexible gasket bonded to both adhesive layers and located between the extension and the shoulder, and flexible sealant means located between the cover-retaining ring and the periphery of the extension to prevent the entry of moisture and corrodents into the spaces between the extension and the cover-retaining ring and shoulder of the valve box.

6. A process for securing an extension to a valve box in a roadway to be repaved comprising the steps of:

cleaning the cover-retaining shoulder of a valve box;



cleaning the bottom surface of an extension compatible with the valve box at least over substantially all of the area thereof which overlies the cover-retaining shoulder of the valve box when the extension ring is in place thereon;

applying a layer of adhesive to said shoulder and to said cleaned area of the bottom surface of the extension;

placing a flexible gasket material on said shoulder and securing the gasket material to the shoulder by said layer of adhesive on the shoulder;

placing the extension on the gasket material and securing the extension to the gasket material by said layer of adhesive on said cleaned area of the bottom surface of the extension; and

filling the space between the periphery of the extension ring and the cover-retaining ring with a curable liquid sealing agent.

4,469,116

VALVE DEVICE FOR THE PREVENTION OF THE OVERFILLING OF PORTABLE CONTAINERS, PARTICULARY GAS CYLINDERS

Frits P. U. Hansen, Rungsted Kyst, Denmark, assignor to Kosan Teknova A/S, Niva, Denmark

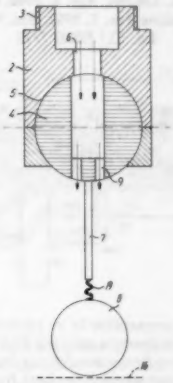
Filed May 10, 1983, Ser. No. 493,214

Claims priority, application Denmark, May 17, 1982, 2224/82

Int. Cl.³ F16K *17/36, 31/18*

U.S. Cl. 137—39 **1 Claim**

1. A valve device to prevent overfilling of portable containers, particularly liquid gas cylinders, comprising a casing having a spherical surface and a fluid filling channel opening in said spherical surface, a freely rotatable ball resting against said spherical surface, a passage extending through said ball, and a load member associated with the ball and extending downwardly therefrom to normally hold the ball in such a position relative to said casing that during the filling operation said passage communicates with said fluid filling channel only when said container is held in a prescribed filling position, said load member forming a float, when submerged in the liquid



gas, and a flexible link connecting said load member to a rod fixed in said ball.

4,469,117

VALVE DEVICE FOR THE PREVENTION OF THE OVERFILLING OF PORTABLE CONTAINERS, PARTICULARLY GAS CYLINDERS

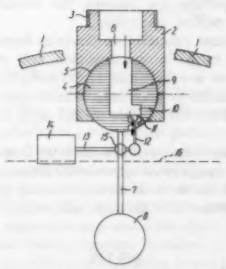
Frits P. U. Hansen, Rungsted Kyst, Denmark, assignor to Kosan Teknova A/S, Niva, Denmark

Filed May 10, 1983, Ser. No. 493,215

Claims priority, application Denmark, May 17, 1982, 2224/82

Int. Cl.³ F16K *17/36, 31/20*

U.S. Cl. 137—39 **3 Claims**



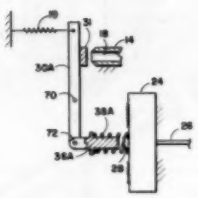
1. A valve device to prevent overfilling of portable containers, particularly liquid gas cylinders,comprising a casing having a spherical surface and a fluid filling channel opening in said spherical surface, a valve member for automatically obstructing the filling flow when a predetermined level has been reached in the container, a freely rotatable ball resting against said spherical surface, a passage extending through said ball, and a load member associated with the ball and extending downwardly therefrom to normally hold the ball in such a position relative to said casing that during the filling operation said passage communicates with said fluid filling channel only when said container is held in a prescribed filling position, said valve member being housed in said passage and being operatively connected to a float associated with said load member.

4,469,118

ICING PREVENTOR

William R. Walters, 910 West Caddo, Cleveland, Ohio 74020

Division of Ser. No. 138,584, Apr. 8, 1980, Pat. No. 4,344,450.
This application Jan. 7, 1982, Ser. No. 337,528
Int. Cl.³ E03B 7/12
U.S. Cl. 137—62 **4 Claims**



1. Apparatus for connection to an outdoor water pipe continuously carrying water at a selected high pressure, for producing a selected low flow rate of water from said water pipe, when the ambient temperature deviates from a selected temperature range, said apparatus positioned in the airspace outside of said pipe in which the water is positioned and under pressure, comprising:

(a) an orifice of selected small diameter in said water pipe to limit the continuous flow rate of water through said orifice;

(b) closed chamber means having an expansible portion, said chamber means filled with a selected material the volume of which varies with temperature in a known manner;

(c) single fixed pivot means with axis at right angle to the axis of said orifice, a single arm pivoted at a selected point intermediate its ends, about said pivot means; closure seal means attached to said arm near a first end thereof along the axis of said orifice, a first selected compliant means being attached to the first end of said arm for maintaining the closure seal means away from the orifice;

(d) said expansible portion is positioned to act upon the second end of said arm, at a selected distance from said pivot; a second selected compliant means positioned at said second end of said arm coaxial with the axis of said expansible portion for moving the closure seal means toward said orifice; whereby,

when the ambient temperature deviates from said selected temperature range in one direction, said expansible portion will move in a direction overcoming the first selected compliant means to press said closure seal means against said orifice from the outside of said pipe, to close off said flow; and

when the ambient temperature deviates from said selected temperature range in an opposite direction said expansible portion will move in a direction away from said arm permitting water flow through said orifice.

4,469,119

PILOT VALVE WITH FUSIBLE LOCKOUT KNOB

David E. Snyder, Longview, and Don Hiller, Midland, both of Tex., assignors to Axelson, Inc., Longview, Tex.

Filed Mar. 29, 1982, Ser. No. 363,000
Int. Cl.³ F16K 13/04
U.S. Cl. 137—72 **3 Claims**

1. In a pilot valve for controlling a supply of control fluid to a controlled valve, having a body, an inlet port, an outlet port, an exhaust port, a pilot port, a valving element responsive to a pilot pressure shiftable between an in service position allowing communication between the inlet and outlet port and a normal position allowing communication between the outlet and exhaust ports, said valving element having a shift portion, said shaft portion defining a first end within the interior of the valve body and a second end extending exteriorly of the valve body, and a first resilient means for biasing the valving element towards the normal position, the improvement comprising a pilot by pass locking and indicating means comprising:

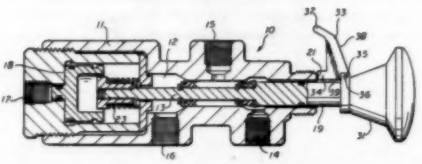
(a) a valve knob connected to the second end of the valving element for manually shifting the element from its normal to its in service position;

(b) a generally "L" shaped locking and indicating member, said member being constructed entirely of a fusible material, said member being pivotally connected to said knob and having

a first leg adapted to frictionally engage a surface of the valve body so as to lock the valving element in its in service position,

a second leg having an indicating surface thereon for indicating the locked in service position,

said locking member being rotatable between a first position in which said first leg extends towards and frictionally engages the surface of the valve body to lock the valving element in its in service position against the action of the



first resilient means and in which said second leg extends away from the shaft portion to position said indicating surface visibly above said knob, and

a second position in which said locking member has said first leg disengaged from the surface of the valve body and said second leg extending along and adjacent to said knob to conceal said indicating surface from view; and

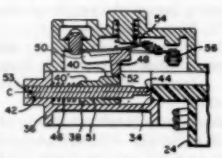
(c) a second resilient means carried by said knob and one of said leg portions and engaging said locking member for biasing said locking member away from said first position towards said second position so that said locking member is retained in the first position against the action of said second resilient means by the frictional engagement of the first leg with the surface of the valve body and so that said second resilient means moves said locking member from said first position toward said second position in response to a reduction of the frictional engagement caused by melting of the locking member responsive to elevated temperature, thereby unlocking the valving element.

4,469,120

FLUID PRESSURE AND SIGNAL CONTROLLER

Patrick J. Anderson, Batavia, and Robert D. Forschler, Roselle, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 30, 1982, Ser. No. 412,681
Int. Cl.³ F15B 5/00
U.S. Cl. 137—85 **28 Claims**



1. An improved fluid pressure and signal controller of the type having at least one rotatable cam member adapted to regulate fluid pressure output of a vacuum modulator valve in response to changes in position of a rotatable input shaft in addition to having switch means associated therewith having

means directly contacting the cam member that actuate the switch means to open or close an electrical circuit at a predetermined position on the cam member, said improved controller characterized by regulating fluid pressure both above and below atmospheric pressure and having at least one calibratable actuator means for actuating a signal generation means at a predetermined position on the cam member, said actuator means having component means associated therewith for adjusting the movement of an output member of the actuator means in response to the rotation of the cam member to account for any repositioning of the cam member undertaken to alter the fluid pressure regulation characteristics of the controller and to adjust the sensitivity of the actuator means where desired, said component means comprising:

a frame secured against movement with respect to the cam member,

a body member moveably disposed with respect to the frame and the cam member, said body member having a profiled portion thereof that is adapted to contact an output member and cause the output member to actuate the signal generation means at a predetermined position on the cam,

cam follower means disposed moveably with respect to the cam member and the body member and the frame, said cam follower means having a portion thereof adapted to contact the cam member and cause the cam follower means to move with respect to the frame and the cam member in response to rotation of the cam member with at least one of said body member and said cam follower means supported by the frame,

means causing the body member to move in response to the movement of the cam follower, and

adjustable positioning means for changing the position of the body member relative the position of the cam follower,

said frame and body member and cam follower means operably cooperating with each other in such a manner that movement of the cam follower means in response to rotation of the cam member causes the body member to move in response to the movement of the cam follower means which causes the profiled portion of the body member to press against the output member and move the output member sufficiently to actuate the signal generation means at a predetermined position on the cam member and adjustment of the positioning means changes the relative position between the cam follower means and the body member and causes the position of the profiled portion of the body member to change with respect to the position of the output member and change the movement of the output member in response to movement of the body member in the amount desired.

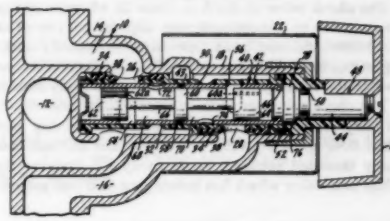
4,469,121

CYCLE VALVES

Alfred M. Moen, Grafton, Ohio, assignor to Stanadyne, Inc., Windsor, Conn.

Filed Jan. 18, 1982, Ser. No. 339,854
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—100 **1 Claim**

1. A valve for mixing hot and cold water including a sleeve having axially spaced and radially non-aligned hot and cold water inlets in the side thereof, outlet means in said sleeve intermediate said inlets, a rotatable non-reciprocal valve member positioned within said sleeve to control the mixture of hot and cold water at said sleeve outlet means, said valve member including a hollow stem having hot and cold water inlet and outlet ports therein and a sealless reciprocally movable pressure balancing spool positioned within said stem, said spool and stem providing two spaced chambers, said stem cold water inlet and outlet ports opening into one chamber and said stem hot water inlet and outlet ports opening into the other chamber, with a portion of said chamber walls forming balancing surfaces for said spool, said stem hot and cold water inlet ports partially circumferentially overlapping so that at any open position of said valve member hot and cold water is in communication with both of said spaced chambers to provide balancing pressures thereon, and valve closing seal means positioned



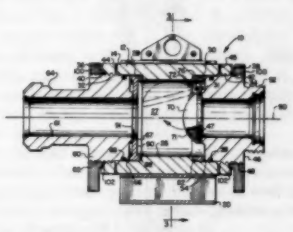
on said sleeve and extending through said sleeve hot and cold water inlets for sealing contact with said valve member.

4,469,122

MODULAR CHECK VALVE

Robert K. Meek, Norman, Okla., assignor to Prince Valve, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 259,694, May 1, 1981, abandoned. This application Sep. 14, 1981, Ser. No. 301,745
Int. Cl.³ F16K *15/00, 43/00*
U.S. Cl. 137—312 **26 Claims**



11. A fluid check valve comprising:

a body member including a central longitudinal bore defining a fluid flow passage, said body member being of a uniform cylindrical tubular configuration with respect to a longitudinal central axis of said bore, valve seat means disposed in said bore, a closure disc pivotally mounted within said bore and operable to be pivoted between an open position and a closed position in engagement with said seat means to prevent fluid flow in one direction through said valve, opposed threaded portions formed on said body member and extending toward each other from opposite ends of said body member, and opposed counterbores extending from said bore toward said opposite ends of said body member, respectively;

a pair of opposed head members removably secured to said body member at opposite ends of said body member, respectively, each of said head members including a longitudinally extending flow passage adapted to be in communication with said bore and an integral cylindrical portion extending into one of said counterbores in said body member, respectively, so that said head members may be mounted on and removed from said body member from said ends of said body member, respectively;

means cooperable with respective ones of said threaded portions on said body member for retaining said head members on said body member, respectively;

substantially fluid tight seal means formed between each of

said cylindrical portions of said head members and said counterbores in said body member and between said bore and said threaded portions, respectively; and

means on said respective head members for coupling said valve to fluid conduit means.

12. The check valve set forth in claim 11 wherein: said seal means comprise an annular seal ring disposed on one of said body member and said head members, respectively, and in sealing engagement with the other of said members, said seal means forming the only fluid seal points in said body member.

13. The check valve set forth in claim 12 wherein:

said body member includes passage means opening into a fluid flow space between said seal means and said internally threaded portions, respectively for draining fluid from said valve which has leaked past said seal means.

4,469,123

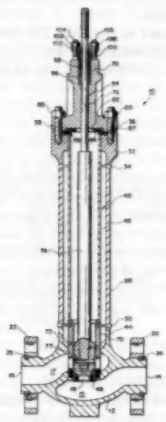
COLD BOX VALVE

Peter K. Merrill, Norton, Mass., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jun. 13, 1983, Ser. No. 503,774

Int. Cl.³ F16K *43/00*

U.S. Cl. 137—315 **6 Claims**



1. A retaining and guiding assembly for a valve, said valve including a valve body, an upward extending elongated body portion on said valve body, a trim assembly disposed in said body portion, a plug and stem assembly fitting within said trim assembly, a valve bonnet which is removably secured to the upper end of said body portion and which carries said plug and stem assembly, said retaining and guiding assembly comprising:

a retainer removably mounted in and carried by bonnet; and

an annular conical disk spring, carried by said retainer, for engaging and biasing said trim assembly within said valve body, wherein said retainer is annular and has a generally L-shaped cross section so as to define a vertical leg and a horizontal leg, said vertical leg being disposed within said valve bonnet and said horizontal leg being inwardly disposed so as to engage the periphery of the upper end of said trim assembly and to radially position and align the upper end of said trim assembly and said retaining guiding assembly within the valve body during placement of said bonnet on said body portion and said valve bonnet and said retaining and guiding assembly being removable as a unit inorder to remove said trim assembly.

4,469,124

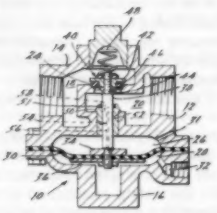
GAS SHUT-OFF VALVE

Robert J. Bronsky, New Baltimore; Dennis B. Clark, Flat Rock, and Jeffrey A. McKeen, Detroit, all of Mich., assignors to Michigan Consolidated Gas Company, Detroit, Mich.

Filed Jan. 18, 1982, Ser. No. 340,376

Int. Cl.³ F16K *17/04*

U.S. Cl. 137—464 **17 Claims**



1. In a valve having a valve body with inlet and outlet chambers therein, valve means separating said inlet and outlet chambers, a pressure chamber in said valve body having fluid pressure-responsive means therein, a valve actuation member having a first end operatively connected to said fluid pressure-responsive means and a second end operatively connected to said valve means, said fluid pressure-responsive means and said valve actuation member being moveable to urge said valve means into an open position in response to fluid pressure above atmospheric pressure in said pressure chamber, the improvement comprising biasing means for biasing said valve means into a closed position, and fluid passage means for providing fluid communication between said outlet chamber and said pressure chamber when said valve means is in said open position and for preventing said fluid communication when said valve means is in said closed position, whereby said valve means is held in its open position when the pressure in said pressure chamber is above said atmospheric pressure, said valve means being biased into its closed position whenever said pressure in said pressure chamber drops below said atmospheric pressure, said fluid passage means including an opening extending through a portion of said valve actuation member, said valve actuation member being slidably received in a sleeve member and positioned such that one end of said fluid passageway is blocked by said sleeve member when said valve means is in its closed position, and sealing means for isolating said opening from said outlet chamber when said valve means is in its closed position.

4,469,125

QUICK RELEASE VALVE

Michael G. Keeney, Tonawanda, N.Y., assignor to C. H. Heist Corporation, Clearwater, Fla.

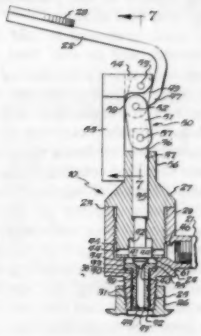
Filed Dec. 16, 1981, Ser. No. 331,143

Int. Cl.³ F16K *17/00*

U.S. Cl. 137—467 **7 Claims**

1. A quick release valve for remaining closed while subjected to high pressure fluid and automatically opening upon sensing an interruption of said high pressure fluid comprising a housing, a fluid inlet in said housing, a fluid outlet in said housing, valve means in said housing in communication with said fluid inlet for selectively preventing or permitting communication between said fluid inlet and said fluid outlet when said valve means are in closed or open positions, respectively, and means coupled to said valve means for maintaining said valve means in said closed position solely in response to said valve means being exposed to high pressure fluid at said fluid inlet and causing said valve means to move to said open position and to maintain said valve means in said open position in response to said interruption of said high pressure fluid at said fluid inlet to cause fluid to flow through said fluid outlet upon the recur-

rence of high pressure fluid at said fluid inlet, said means coupled to said valve means comprising a plunger mounted in said housing and coupled to said valve means, a toggle linkage comprising first and second links, a first pivotal connection between said first and second links, a second pivotal connection between said first link and said plunger, a third pivotal connection effectively located between said second link and



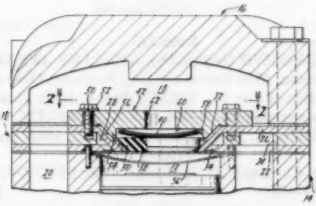
said housing, means for maintaining said toggle linkage in an overcenter position to maintain said valve means closed when said valve means are subjected to high pressure fluid, and biasing means for biasing said toggle linkage to a broken position from said overcenter position to move said valve means to an open position to place said fluid inlet in communication with said fluid outlet after said valve means are not subjected to said high pressure fluid.

4,469,126

DISCHARGE VALVE ASSEMBLY FOR REFRIGERATION COMPRESSORS

Francis M. Simpson, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Nov. 4, 1981, Ser. No. 318,055
Int. Cl.³ F16K *21/04*
U.S. Cl. 137—543.19 **10 Claims**



1. An improved valve plate assembly for use in a compressor having a compression chamber, said valve plate assembly comprising;

a valve plate adapted to be positioned in overlying relationship to said compression chamber, said valve plate having a conical discharge opening extending therethrough, an inner portion of the sidewall of said opening in part defining a valve seat;

a valve member movably disposed within said opening;

biasing means operative to urge said valve member into engagement with said valve seat; and

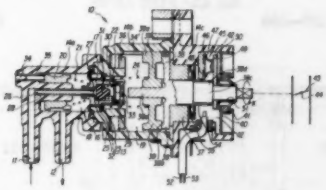
diffusion means extending into said opening, said diffusion means including a generally conical surface positioned in said discharge opening spaced a given dimension from said sidewall of said opening and cooperating with said sidewall to define an annular conical diffusion discharge passage therebetween having a length greater than said given dimension, said diffusion discharge passage forming a continuation of the flowpath between said valve member and valve seat when said valve member is in an open position.

4,469,127

SIGNAL GENERATING DEVICE IN RESPONSE TO THE DEGREE OF OPENING OF A THROTTLE VALVE

Kazuhiko Kitamura, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 26, 1982, Ser. No. 362,401
Claims priority, application Japan, Mar. 27, 1981, 56-45973
Int. Cl.³ F16K *37/00*; F15B *5/00*
U.S. Cl. 137—554 **8 Claims**



1. A signal generating device operable in response to the degree of opening of a throttle valve, comprising:

a body having a vacuum inlet port, a vacuum outlet port and an atmospheric inlet port;

movable diaphragm means positioned within said body to thereby define a vacuum chamber in communication with said vacuum outlet port and an atmospheric chamber in communication with said atmospheric inlet port, said movable diaphragm means being movable in response to vacuum pressure within said vacuum chamber;

at least one spring means biasing said movable diaphragm means towards said vacuum chamber;

a valve member associated with said movable means for controlling fluid communication between said vacuum inlet port and said vacuum chamber as well as fluid communication between said vacuum chamber and said atmospheric chamber;

at least one sliding means positioned within said body to adjust the biasing force of said at least one spring means;

cam means rotatably positioned within said body and operatively connected to said throttle valve to thereby cause said at least one sliding means to slide in response to the degree of opening of said throttle valve wherein said cam means further comprises a cam shaft rotatable in response to the degree of opening of said throttle valve and a cam face provided on a first end of said cam shaft;

a potentiometer positioned on a second end of said cam shaft opposite said cam means, said cam face being engageable with said sliding means having a stator which is securely positioned within said body and a slidable contactor which is secured to said cam means;

a pair of conductors and a pair of lead wires electrically connected to said pair of conductors, said conductors being in slidable contact with said slidable contactor, such that the electrical resistance between said conductors and therefore said lead wires is changed in response to rotation of said cam means;

said at least one spring means and said at least one sliding means including second spring means and second sliding means, respectively, wherein said second sliding means is positioned to adjust the biasing for said second spring means and wherein said second sliding means is adjustably positioned by a screw; and

whereby said cam means provides a simultaneous regulation

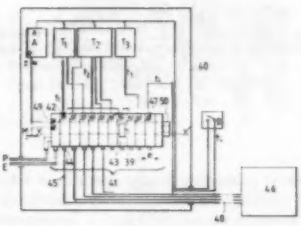
of the vacuum in said vacuum chamber and an electrical regulation of the output of said potentiometer so that said signal generating device simultaneously provides a linear relationship between the vacuum in said vacuum chamber and the opening of said throttle valve and also a linear relationship between the electrical output of said potentiometer and the opening of said throttle valve.

4,469,128

SYSTEM FOR DISTRIBUTING BY ELECTRICAL MEANS PNEUMATIC CONTROL SIGNALS

Eric Petrimaux, Evreux, and Pierre Prudhomme, Saint Germain en Laye, both of France, assignors to La Telemecanique Electrique, France

Filed Apr. 23, 1982, Ser. No. 371,361
Claims priority, application France, Apr. 24, 1981, 81 08230
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—554 **5 Claims**



1. An electrically controlled system for distributing pneumatic signals, comprising:

(A) an elongated support element having a longitudinal axis and two parallel longitudinal flanges,

(B) a plurality of adjacent base elements each having:

a securing surface having securing means adapted for longitudinal sliding engagement and fixing on said flanges,

a first association surface opposite to the securing surface and substantially parallel thereto, said first association surface having a first lateral zone with first, second and third orifices and a second lateral zone opposite to the first lateral zone, said second lateral zone having at least first and second windows,

first and second opposite coupling surfaces which are parallel with each other and perpendicular to said axis, said first coupling surface comprising first and second openings and said second coupling surface comprising a third window and first and second openings respectively coaxial to the first and second openings of the first coupling surface so that in coupling engagement of two base elements by the respective first and second coupling surfaces thereof, said first and second openings of the coupling surface of one base element are respectively in communication with the first and second openings of a corresponding coupling surface of an adjacent base element,

first and second electrical female coupling members located in each base element and respectively debouching into said first and second windows, perpendicularly to said first association surface and a third female electrical coupling member located in the base element and debouching into said third window perpendicularly to said second coupling surface,

first and second opposite end surfaces respectively adjacent to said first and second lateral zones, said first end surface having an aperture provided with a pneumatic connection and said second end surface being provided with an electrical connection device,

first and second channel portions respectively connecting together said first and second openings of said first and second coupling surfaces through the base element, said first and second channel portions being also respectively connected to the first and second orifices of the first lateral zone,

a third channel portion connecting the third orifice of the first lateral zone to the aperture of the first end surface,

electrical conducting means connecting said first electrical coupling member to said electrical connection device through said base element,

a conducting piece connected to said second electrical coupling member and to said third female coupling member, said conducting piece having a male electrical coupling member projecting beyond said coupling surface parallel to said longitudinal axis and coaxially to said third female member so that in sliding engagement of two adjacent base elements along said longitudinal axis, the male electrical coupling member can penetrate into said female electrical coupling member,

(C) a plurality of electro-magnetic valves each comprising:

a body having a second association surface adapted to be adjusted onto said first association surface of one corresponding base element in a coupling arrangement and including an inlet opening, and outlet opening, and exhaust opening and at least first and second electrical connection terminals projecting from said second surface so that in said coupling arrangement, said outlet opening, said exhaust opening and said inlet opening communicate respectively with said first, second and third orifices of said first association surface, and said first and second electrical connection terminals are electrically coupled with said first and second electrical coupling member of said base element,

a control electro-magnet located in said body and having a coil connected to said first and second electrical connection terminals, a mobile armature having at least first and second positions, valve means including actuation means connected to said armature, a pressure duct connected to said inlet opening, an exhaust duct connected to said exhaust opening, an outlet duct connected to said outlet opening and a valve member controlled by said actuation means for connecting said outlet duct with said pressure duct when said armature is in the first position and for connecting said outlet duct with said exhaust duct when said armature is in said second position.

4,469,129

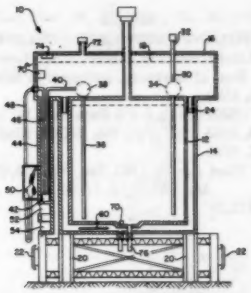
ABOVE GROUND GASOLINE STORAGE APPARATUS

John W. Dixon, 9870 Fairmount Rd., Newbury, Ohio 44065

Continuation of Ser. No. 174,857, Aug. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 023,725, Mar. 26, 1979, abandoned. This application Apr. 22, 1982, Ser. No. 370,824
Int. Cl.³ B65D *25/18*; F16K *24/00*; F17C *3/02*
U.S. Cl. 137—587 **3 Claims**

1. An above ground storage apparatus for a dangerous liquid comprising an inner compartment having impervious top and side wall portions defining a chamber for receiving the dangerous liquid, a layer of closed cell insulation material secured to and covering a surface of said side wall portion of said inner compartment, an outer compartment having top and side wall portions enclosing the respective top and side portions of said inner compartment and spaced therefrom, a body of non flammable aqueous liquid confined in the space between said inner and outer compartments, said body of non flammable aqueous liquid surrounding the side wall portion of said inner compartment and being in heat transfer relationship with said insulation layer covering said surface of said side wall portion of said inner compartment, first vapor vent means provided in the outer compartment and disposed above the body of non flammable liquid for venting vapor from said outer compartment to the atmosphere, second vapor vent means provided in the

inner compartment and disposed above the dangerous liquid for venting vapor from said inner compartment to the atmosphere, said body of aqueous liquid being confined as a normally static body in the space between said inner and outer compartments so that the body of aqueous liquid dissipates heat essentially by absorption and evaporation in the space between the outer and inner compartments, said first vapor vent means venting vapors resulting from evaporation of said aqueous non flammable liquid to the atmosphere while said



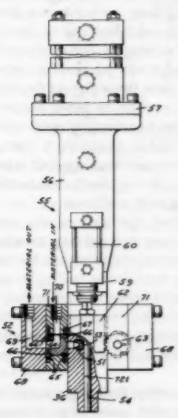
body of non flammable aqueous liquid is evaporating and said second vent means venting any vapor resulting from evaporation of the dangerous liquid in the inner comporatment to the atmosphere, said body of non flammable aqueous liquid limiting the heat transferred to the closed cell insulation on the inner compartment while said body of non flammable aqueous liquid is evaporating, and said closed cell insulation further limiting transfer of heat from said body of non flammable aqueous liquid to said dangerous liquid in said inner compartment.

4,469,130

ADJUSTABLE ORIFICE FOR REACTION INJECTION MOLDING

James R. Jones, Clarksville, Ind., and W. G. Cryderman, Birmingham, Mich., assignors to Accuratio Systems Inc., Jeffersonville, Ind.

Filed Aug. 23, 1982, Ser. No. 410,382
Int. Cl.³ B01F *5/04*
U.S. Cl. 137—606 **17 Claims**



1. Continuously variable orifice discharge means for use in high pressure multiple liquid component mixing heads such as employed in reaction injection molding systems characterized by:

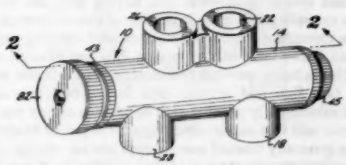
means for simultaneously supplying liquid components under pressure to multiple opposed orifice means for effective mixing impingement, each of said opposed orifice means comprising continuously variable orifice opening surface means relatively movable in a direction transverse to the direction of liquid flow to provide continuously variable adjustment of effective respective impinging discharge passage areas.

4,469,131

SPOOL VALVE

Paul L. Traylor, 16591 Milliken Ave., Irvine, Calif. 92714

Filed Jul. 12, 1982, Ser. No. 397,414
Int. Cl.³ F16K *11/18*
U.S. Cl. 137—599.1 **30 Claims**



1. A spool valve comprising:

a casing including internally threaded members at opposite extremities of said casing, said casing further including means defining a first chamber having a first port, a second chamber having a second port, a third chamber having a third port, and a fourth chamber having a fourth port, said means further defining a passage between said first and second chambers surrounded by a first valve seat, said means further defining a passage between said second and third chambers surrounded by a a second valve seat, said means further defining a passage between said third and fourth chambers surrounded by a third valve seat in confronting relation to said second valve seat;

a valve stem supported by said casing for axial movement and comprising a pair of axially aligned stem portions coupled at their adjacent ends for rotation in common and axial movement relative to each other, said stem portions being threadably supported by said threaded members, respectively; and

first and second valve heads mounted to and movable with said valve stem toward a first position in which one face of said first valve head is unseated from said first valve seat, and opposite faces of said second valve head are seated upon second valve seat and unseated from said third valve seat, respectively, to direct fluid from said second port to said first port, and from said fourth port to said third port, said first and second valve heads being movable with said valve stem toward a second position in which said one face of said first valve head is seated upon said first valve seat, and said opposite faces of said second valve head are unseated from said second valve seat and seated upon said third valve seat; and

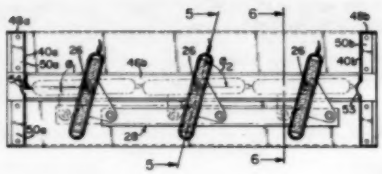
valve stem actuation means operable to axially move said valve stem, said stem portions being rotatably and axially movable upon operation of said valve stem actuation means.

4,469,132

DAMPER APPARATUS

Gordon F. Redington, St. Paul, Minn., assignor to McQuay Inc., Minneapolis, Minn.

Filed Jun. 28, 1982, Ser. No. 392,945
Int. Cl.³ F24F *13/16*; F16K *1/226*
U.S. Cl. 137—601 **19 Claims**



8. A damper assembly for controlling a flow of fluid through a passageway, comprising:

(a) a frame defining a generally rectangular opening of predetermined width and height, said frame being suitably mounted in said passageway;

(b) a plurality of hollow, generally rectangular blades having first and second side walls and having first and second edges extending along the longitudinal extent thereof, said blades extending transversely across said opening defined by said frame, said blades having first and second ends, said blades being pivotally mounted on said frame proximate said first and second ends for pivotal movement about substantially parallel axes between a closed position wherein said first and second edges of adjacent blades are facing generally toward one another but are spaced apart, and an opened position wherein said blades lie in generally spaced parallel planes;

(c) said first edge of said blades being curvilinear and including a central portion and first and second side portions interconnecting said central portion to said first and second side walls respectively, said first edge having about a major portion thereof proximate said central portion a radius of curvature which is greater than one have the thickness of said blades, said first edge further having a radius of curvature less than one-half thickness of said blades proximate said first and second side portions, said second edge of said blades including a flexible blade-like member extending longitudinally thereof, said flexible bladelike member of said second edge having a greater width than the spacing between said second edges and said first edges of adjacent blades when said blades are in said closed position, said flexible blade-like member wiping said first edge of an adjacent blade when said blades are pivoted into said closed position to prevent any fluid flow between said first and second edges of adjacent blades;

(d) end cap means positioned proximate said first and second blade ends between said blades and said frame for supporting said blades, said end cap means cooperating with said frame to provide a fluid-tight seal between said first and second ends of said blades and said frame when said blades are in said closed position;

(e) drive shaft means for transferring power from an external source of power to said blades, whereby said blades can be driven between said opened and closed positions;

(f) linkage means interconnecting said blades whereby said blades are pivoted substantially simultaneously between said opened position and said closed position, said linkage means including an elongated member pivotally interconnected to at least one of said end cap means of each of said blades by an elongated control arm, said elongated member of said linkage means being offset from the axes of said blades and extending generally transversely of said frame; and

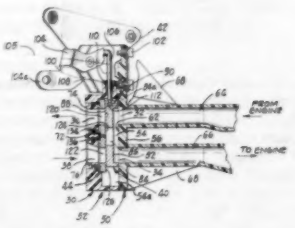
(g) said frame including first and second sides, said first side including flexible seal means for sealingly engaging said first blade edge of the blade adjacent said first side when said blades are in said closed position, said second side including flexible seal means for sealingly engaging said flexible blade-like member of said second blade edge of the adjacent blade when said blades are in said closed position, whereby fluid flow between said blades and said frame sides is prevented when said blades are in said closed position.

4,469,133

ENGINE COOLANT FLOW CONTROLLING VALVE

Hans Boesing, Oftersheim, and Dieter Gabler, Graben-Neudorf, both of Fed. Rep. of Germany, assignors to Ranco Incorporated, Dublin, Ohio

PCT No. PCT/US82/00422, § 371 Date Nov. 14, 1983, § 102(e) Date Nov. 14, 1983, PCT Pub. No. WO83/03652, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 6, 1982, Ser. No. 555,459
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—625.29 **5 Claims**



1. An engine coolant flow controlling valve for governing the flow of engine coolant to a heat exchanger comprising:

(a) a valve housing defining first and second ports for respectively introducing coolant to the valve housing from the engine and directing coolant to the engine from the housing, said first and second ports opening into said housing adjacent each other in a housing wall, and third and fourth ports for respectively directing coolant from the housing to the heat exchanger and introducing coolant from the heat exchanger to the housing;

(b) a ceramic valving member supported for translational movement in said housing between a first position wherein coolant flows to said heat exchanger via said first and third ports and returns to the engine via said second and fourth ports and a second position wherein said valving member blocks flow through said third and fourth ports so that coolant flows from said first port to said second port bypassing said heat exchanger, said valving member having one side slidably engaging a valving member slide surface formed on said housing wall in sealing engagement therewith, said valving member movable along said slide surface between said positions;

(c) valving member operator means extending into said housing for moving said valving member, and

(d) valving member engaging means for resiliently maintaining said valving member in sealing engagement with said housing wall, said engaging means surrounding each of said third and fourth ports in sealing relationship with said housing and sealingly engaged with said valving member at least when said valving member is in said second position;

(e) said valving member defining a recessed area within said one lateral side with a valve port opening through said valving member into said recessed area, said recessed area shaped to overlie said first and second ports when said valving member is in said second position, said valving

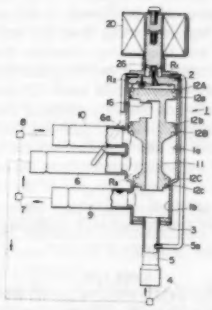
member engaging means sealingly engaged with said valving member to prevent flow through said valve port to said third and fourth ports.

4,469,134

FOUR-WAY VALVE FOR REVERSIBLE REFRIGERATION CYCLE

Yoshikazu Kanai, and Hideaki Ohira, both of Sayama, Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,578
Claims priority, application Japan, Sep. 30, 1981, 56-153840
Int. Cl.³ F16K *11/07, 31/40*
U.S. Cl. 137—625.43 **3 Claims**



1. A four-way valve for reversible refrigeration cycle which comprises

a casing having a small diameter section and a large diameter section;

a delivery tube in communication with a compressor and opening into said casing;

a suction tube in communicating with said compressor and opening into said casing;

a pair of tubes in communication with two heat exchangers, respectively, and opening into said casing one on each side of the suction tube;

a valve means for communicating said suction tube selectively with either one of said pair of tubes;

a two-way pilot valve including electromagnetic means and a plunger tube longitudinally mounted and extending with respect to the large diameter section of the casing, a plunger slidably fitted within said plunger tube, a plug provided to block the large diameter section to define a chamber in cooperation with said plunger tube;

said plug being formed with a first passageway to provide communication between the chamber and the large diameter section of the casing, said plunger normally being biased to close the first passageway while adapted to retract to open the first passageway by energization of the electromagnetic means, said first passageway having a larger diameter section on a plunger side of the plug and a smaller diameter section on a casing side of the plug, and a rod snugly and slidably received in said smaller diameter section of said first passageway to project from either one side of the plug;

said plug being further formed with a second passageway branching off the large diameter section of the first passageway to provide communication between the large diameter section of the casing and the chamber of the two-way pilot valve;

said plug being still further formed with a third passageway to admit high pressure refrigerant from the compressor by way of said chamber and the second passageway into the large diameter section of the casing;

said plug being still further formed with a fourth passageway to admit low pressure refrigerant from the compressor directly into the large diameter section of the casing; and

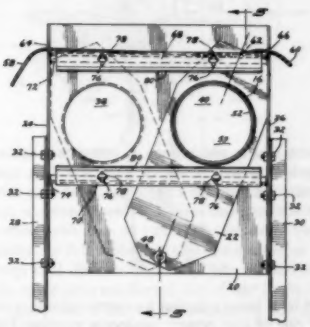
said plug having a leaf spring attached thereto on a casing side thereof at its one end and carrying a flat valve disc at its other end, said leaf spring biasing said flat valve disc to close the fourth passageway upon energization of the electromagnetic means and being adapted to open the same upon de-energization of the electromagnet means.

4,469,135

AIR ENTRAINED PARTICULATE MATERIAL VALVE

B. Martin Gray, R.R. 1, Box 13, Page, N. Dak. 58064

Filed Oct. 21, 1981, Ser. No. 313,467
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—625.45 **6 Claims**



1. A valve adapted for mounting on the roof of a building structure such as a grain bin for selectively diverting air entrained particulate material, the valve comprising:

a back plate having a first surface and a pair of flanges on the sides thereof, and a plurality of outlet openings defined therethrough;

a gate plate having a surface facing said first surface and an inlet opening defined therethrough, the surfaces of the back plate and gate plate mating with each other with the gate plate positioned between the flanges;

means for pivotally connecting the gate plate to the back plate so that the gate plate is selectively movable to a plurality of positions wherein in each position the inlet opening is aligned with one of the outlet openings;

a length of flexible inlet conduit, one end of the conduit being connected to the inlet opening to permit the gate plate to pivot to its respective positions while the opposite end of the conduit remains stationary; and

means for urging the surfaces of the gate plate and the back plate toward each other comprising a support and a spring bar mounted on the support, the support being secured at its ends to the side flanges and being parallel to and spaced from the back plate, the gate plate being positioned between the support and the back plate, and the spring bar resiliently bearing against the gate plate.

4,469,136

SUBSEA FLOWLINE CONNECTOR

Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Hughes Tool Company, Houston, Tex.

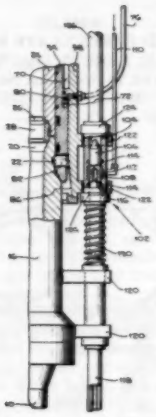
Division of Ser. No. 101,417, Dec. 10, 1979, Pat. No. 4,326,328, which is a division of Ser. No. 875,639, Feb. 6, 1978, Pat. No. 4,200,312. This application Feb. 22, 1982, Ser. No. 351,116
Int. Cl.³ F16L *39/00*
U.S. Cl. 137—798 **12 Claims**

2. In a fluid flowline connected together by a locking connector having one portion carried by one side of the flowline and a second portion carried by the other side of the flowline, the improvement comprising:

(a) locking means carried by the one portion of the locking connector adapted for locking engagement with the second portion;

(b) means also carried by the one portion of the locking connector for activating said locking means into and out of locking engagement with the second portion; and,

(c) a separable power connector having an inlet portion including an inlet and an outlet portion including an out-



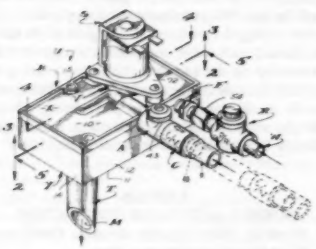
let, said inlet being adapted for connection to a source of power, one of said power connector portions being carried by the second portion of the locking connector, the other of said power connector portions being carried by said lock activating means to move in combination therewith and being positioned to establish continuity between said inlet and said outlet only when said locking means is activated into locked engagement with the second portion of the locking connector by said lock activating means.

4,469,137

LIQUID METERING AND MIXING ASPIRATOR UNIT

Robert K. Cleland, 11051 Via el Mercado, Los Alamitos, Calif. 90720

Filed Aug. 5, 1982, Ser. No. 405,424
Int. Cl.³ F16K 19/00
U.S. Cl. 137—893 4 Claims



1. A liquid metering and mixing aspirator structure defining an elongate substantially horizontal cylindrical aspirator chamber with an upstream inlet end and a downstream outlet end, an elongate nozzle passage smaller in diameter than the aspirator chamber on an axis parallel with and laterally offset from the axis of and toward one side of the aspirator chamber and having its outlet end communicating with the upstream end of the aspirator chamber adjacent said one side thereof, an elongate liquid concentrate inlet port with an upstream inlet end and with a downstream outlet end communicating with the upstream end portion of the aspirator chamber at the other side thereof, an elongate cylindrical vertically extending mixing chamber with a closed upper end and an open lower end and larger in diametric extent and in flow capacity than the aspirator chamber and through which liquids received from the aspirator chamber flow by the force of gravity, the mixing chamber has an upper receiving end portion extending transverse and communicating with the outlet end of the apsirator chamber, water supply means connected with the inlet end of the nozzle passage and connected with a high pressure water supply and liquid concentrate supply means connected with the inlet end of the port and liquid jet deflecting means at the upper end portion of the mixing chamber and including a deflecting surface spaced downstream from the outlet end of the aspirator chamber and positioned in the path of and disposed to redirect liquids flowing from the aspirator chamber radially inwardly into the mixing chamber circumferentially and downwardly into vortex flow downwardly in and through the mixing chamber wherein said water jet deflecting means includes an elongate downwardly opening channel in a top surface of the mixing chamber continuing radially inwardly from the outlet end of the aspirator chamber and through which a portion of the liquids issuing from the outlet end of the aspirator chamber is directed, the end of the channel remote from the aspirator chamber terminates at the central portion of the mixing chamber and defines said deflecting surface.

4,469,138

PIPES MADE OF POLYPROPYLENE REINFORCED WITH CARBON FIBERS

Hiroaki Satoh, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 288,798, Jul. 31, 1981, abandoned. This application Dec. 20, 1983, Ser. No. 563,540
Claims priority, application Japan, May 16, 1980, 55/63998
Int. Cl.³ F16L 9/00
U.S. Cl. 138—174 3 Claims

1. A pipe for hot water of polypropylene reinforced with carbon fibers made from a composite material consisting essentially of:

(a) 100 parts by weight of polypropylene;

(b) 10 to 40 parts by weight of a modified polypropylene selected from the group of: (1) polypropylene modified by the chemical addition of from 1 to 8 parts by weight of an organic unsaturated carboxylic acid per 100 parts by weight of polypropylene, said acid being selected from the group consisting of maleic acid, acrylic acid, methacrylic acid, fumaric acid, endobicyclo (2.2.1)2, 3-dicarboxylic acid and their anydrides; and (2) propylene copolymerized with from 1 to 8 parts by weight of said carboxylic acid per 100 parts by weight of said propylene; and

(c) from 5 to 70 parts by weight of carbon fibers having a diameter of from 5 to 30 micrometers and a ratio of diameter to length of at least 10.

4,469,139

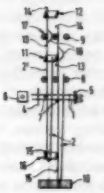
DOUBLE LIFT OPEN SHED JACQUARD LOOM

Wolfgang Seiler, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Firma Oskar Schleicher, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,257
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113433
Int. Cl.³ D03C 3/08, 3/24
U.S. Cl. 139—65 4 Claims

1. In a double-lift open-shed Jacquard loom having a vertically-movable hook, said hook having a leg portion provided with first, second and third noses thereon, having a first blade arranged to selectively engage said first nose, having a second blade arranged to selectively engage said second nose, and

having a third blade arranged to selectively engage said third nose, having lifting means for moving said first and second blades upwardly and downwardly in opposite directions towards and away from one another, having a member, and having a control needle for selectively determining which of said blades will engage the associated nose, the improvement which comprises:



bracing means acting between said member and said hook only when said third blade engages said third nose for biasing said leg portion laterally such that said first and second noses will be held in operative positions at which they may be selectively engaged by the associated blades.

4,469,140

DOUBLE-LIFT OPEN-SHED JACQUARD LOOM

Wolfgang Seiler, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Firma Oskar Schleicher, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,258

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113434

Int. Cl.³ D03C *1/08*

U.S. Cl. 139—65 **7 Claims**

1. A double-lift open-shed Jacquard loom comprising: a plurality of control needles; a plurality of hooks controlled by the control needles; first and second sets of blades which are vertically spaced from one another and which are movable in opposite directions towards and away from each other and which are adapted to engage respective ones of said hooks for causing selective movement thereof, each blade of at least one set being mounted pivotally about an imaginary axis extending in the longitudinal direction of said blades; lifting means for moving said first and second sets of blades in a vertical direction; and pivoting means for producing simultaneous parallel pivotal movement of said pivotal blades while said blades are being moved for bending any engaged hook.

4,469,141

DOUBLE LIFT DOBBY

Abdul W. Omar, Lahore, Pakistan, assignor to Pakistan Council of Scientific and Industrial Research, Karachi, Pakistan

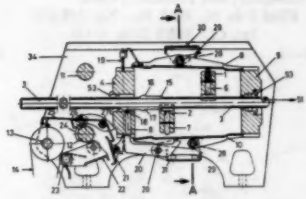
Filed Sep. 23, 1982, Ser. No. 421,870

Claims priority, application United Kingdom, Sep. 30, 1981, 8129577; Dec. 14, 1981, 8137627

Int. Cl.³ D03C *1/06*

U.S. Cl. 139—71 **7 Claims**

1. A reciprocating double lift dobby for a loom operating with open shed action, said dobby comprising a primary drive including two reciprocating drive members and a drive mechanism which reciprocates said drive members 180 degrees out of phase and at half the loom frequency, a plurality of substantially rigid shafts which, in use, are connected one to each of the loom harnesses, means defining a pair of base positions for said rigid shafts and capable of holding each of said shafts stationary in either of said base positions to define said open shed, means for selectively engaging each of said shafts with either of said drive members in either of said base positions for movement therewith between said base positions, and selection



means which is actuated on each stroke of said drive members to operate said engaging means to engage selectively said shafts with said drive members whereby each selected one of said shafts is moved from its current base position to the other base position with one or other of said drive members and substantially the full motion of said drive member is transmitted through said shaft to shed said loom harness connected to said shaft, while each unselected one of said shafts remain in its current base position and is not contacted nor disturbed by either of said drive members.

4,469,142

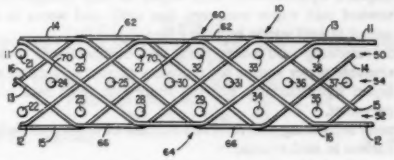
PAPERMAKERS BELT HAVING SMOOTH SURFACES AND ENLARGED SEAM LOOPS

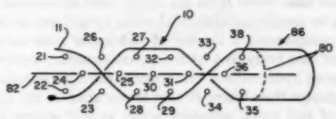
William J. Harwood, Waycross, Ga., assignor to Scapa Inc., Waycross, Ga.

Filed Sep. 30, 1980, Ser. No. 192,216

Int. Cl.³ D03D *15/00*; D21F *1/10, 7/08*

U.S. Cl. 139—383 A **15 Claims**





1. A papermakers fabric comprising:

a first layer defined by a first plurality of weft yarns;

a second layer defined by a second plurality of weft yarns;

a plurality of stuffer picks; and

a plurality of warp yarns interwoven with said weft yarns to define a first surface of said first layer, a second surface on said second layer, and a plurality of stuffer pick receiving sheds interposed between said first and second layers, each shed for receiving at least one of said stuffer picks, a select number of said shed defining warp yarns extending

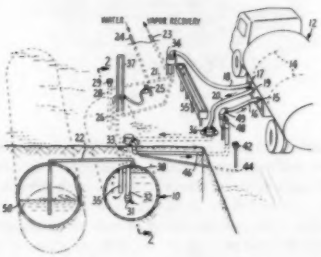
out of a warp end of said fabric and being symmetrically rewoven into said fabric to produce a mirror image of itself when viewed with respect to the plane defined by said stuffer picks and to define a number of seam loops, one seam loop being formed by at least one of six adjacent shed defining warp yarns.

4,469,143

TANK TRUCK PURGING SYSTEM

Gholam R. Vazin, Westminster, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 16, 1982, Ser. No. 349,171
Int. Cl.³ B08B 3/04, 9/00
U.S. Cl. 141—1 **8 Claims**



1. A method of purging a tank truck compartment of residual hydrocarbon materials to permit safe entry for maintenance, or repair and the like, without hydrocarbon pollution of the environment which comprises

forming a finite source of reusable water to purge a tank truck compartment as a horizontally elongated body, tilting said body sufficiently to form upper and lower separation zones at opposite ends of said elongated body,

connecting a fill line for said tank truck compartment between said upper and lower zones, of said source of reusable water, and connecting a vapor recovery line for said tank truck compartment to a vapor recovery system,

pressurizing water from said source through said fill line to displace hydrocarbon fluid vapor in said compartment toward said vapor recovery line until said water is detected in said vapor recovery line,

then returning said water from said compartment to said reusable water source for recovery of said water and any liquid hydrocarbons flowing therewith from said compartment,

gravity separating said returned mixture of water and hydrocarbon in said source,

recovering hydrocarbon components having a specific gravity less than water from the upper zone at one end of said body by supplying additional water to said source to drive said components at the top of said upper zone out of said end of said body to a hydrocarbon recovery system, and

recovering hydrocarbon components having a specific gravity greater than water in said lower zone at the opposite end of said body, whereby water in said source may be reused substantially without recirculation of hydrocarbons entrained therein with said water.

7. Apparatus for purging a vehicle tank compartment of residual liquid and vapor hydrocarbon components to permit access to the interior of said compartment for repair, maintenance and the like without contamination of the environment or safety hazard to persons in the vicinity which comprises

an elongated, cylindrical purge water storage tank, said tank having its longitudinal axis tilted relative to horizontal to form at least a pair of gravity separation zones at opposite ends of said tank for mixtures of water and hydrocarbon,

an intake pipe member extending into the upwardly tilted end of said tank and below the upper separation zone of said tank,

means for connecting said intake pipe to a vehicle tank loading system, said loading system including a loading hose connectable thereto, connection means for engaging said loading hose to a loading valve for a tank compartment on said vehicle, pump means for pumping water from said storage tank through said intake pipe and said loading hose into said compartment, and valve means for selectively controlling flow of purge water from said storage tank to said compartment,

a return flow pipe member extending into said storage tank between said separation zones,

means for connecting said return flow pipe to a vehicle tank compartment unloading system, said unloading system including a control valve for said compartment and an unloading hose connectable to said control valve,

means for recovering hydrocarbon material displaced from said compartment into said purge water storage tank including a source of water,

an input line from said source of water extending into said tank below said upper separation zone, an overflow line connected to communicate with said upper separation zone, said overflow line being connected to hydrocarbon recovery means, and

a sludge removal pipe connected into said lower separation zone,

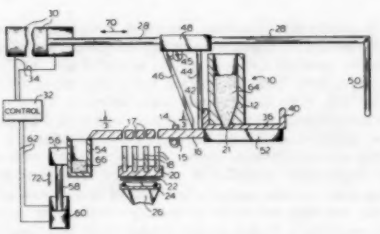
whereby hydrocarbons with specific gravity less than water may be removed from said tank by overfilling said tank from said source and hydrocarbons with specific gravity greater than water are removable through said sludge pipe, and purge water in said tank may be periodically cycled through a vehicle tank compartment to displace all hydrocarbons therein and thereby permit safe access into said compartment for maintenance, repair and the like thereof.

4,469,144

AUTOMATIC POWDER DISPENSING METHODS AND APPARATUS

James A. Burns, Elizabeth, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed May 21, 1982, Ser. No. 380,505
Int. Cl.³ B65B 1/04
U.S. Cl. 141—1 **12 Claims**



9. A process for controlling the dispensing simultaneously of a plurality of portions of fine powders into individual containers, characterized by

(a) utilizing a dispensing plate having a plurality of spaced apart dispensing bores therein of specific dimensions depending upon the desired quantity of each of said plurality of portions;

(b) depositing sequentially on said dispensing plate along one side edge thereof elongated slugs of fine powder to be dispensed;

(c) after said dispensing step, sweeping a brush across said dispensing plate from said forming step to sweep said slug of fine powder through said dispensing bores;

(d) receiving said plurality of portions of dispensed powder from said sweeping step in a plurality of containers positioned under said dispensing bores; and

(e) repeating said depositing and sweeping steps while simultaneously moving a new set of containers for said receiving step under said dispensing bores.

4,469,145

METHOD OF MAKING BATTERY PLATES

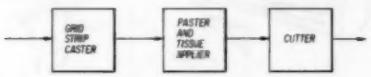
Norman W. Fletcher, Manchester, and Geoffrey J. May, Warrington, both of England, assignors to Chloride Group Limited, London, England

Filed Aug. 17, 1981, Ser. No. 293,306

Claims priority, application United Kingdom, Aug. 21, 1980, 8027267

Int. Cl.³ B65B *3/04*; H01L *2/00*

U.S. Cl. 141—1.1 **5 Claims**



1. A method of making battery plates, said method comprising the steps of:

continually casting a skeletal grid in the form of two parallel lines of plate grids, each grid having a plurality of bars radiating from a connection lug, each of the bars of one line of plate grids being united with the bars of the adjacent plate in the other of the parallel lines, and also being united with the bars of the adjacent plates in the same line; and

cutting the cast grid transversely to, and parallel with, the direction of the parallel lines, so as to form individual plates.

2. The method as claimed in claim 1 in which the skeletal grids are cast continuously, said method including the steps of continuously pasting said cast grids and applying continuous glass tissues on either surface of the pasted skeletal grid, said pasting and tissue applying steps being performed on said cast grids before each line is cut into individual plates.

4,469,146

APPARATUS AND PROCESS FOR PREPARING QUANTITATIVE CHEMICAL SOLUTIONS

Jeptha E. Campbell, Cincinnati, and James E. Gilchrist, Terrace Park, both of Ohio, assignors to Spiral Systems, Inc., Cincinnati, Ohio

Filed Feb. 10, 1982, Ser. No. 347,467

Int. Cl.³ G01G *19/28*

U.S. Cl. 141—9 **22 Claims**

9. A process for mixing solutions of specified molarity and approximate volume comprising:

(a) specifying a molarity M of a solution to be mixed in a container by the addition of a solvent to a solute within the container;

(b) specifying an approximate volume V of solution of the specified molarity M;

(c) calculating a weight of solvent plus solute TW for mixing the solution of specified approximate volume V;

(d) calculating a weight of solute WS required for mixing the solution with the weight TW of solute plus solvent;

(e) adding a weight of solute to the container which is less than, equal to or greater than WS;

(f) calculating a weight of solvent plus solute TW for mixing the solution of specified molarity M from the actual weight of solute WS which has been added to the container; and

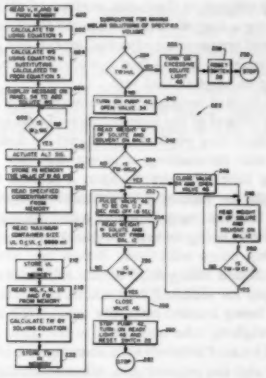
(g) adding solvent to the container until the weight of solvent plus solute is equal to the calculated weight TW for mixing the solution of specified molarity M from the actual weight of solute WS which has been added to the container.

19. An apparatus for making a solution of specified molarity from a solute placed in a container by the addition of solvent to the container comprising:

(a) means for repeatedly measuring the weight W of the solute plus any solvent within a container;

(b) means for specifying the molarity M of the solution to be mixed from a solute within the container by the addition of solvent to the container;

(c) fluid conducting means disposed between a source of



solvent and the container for transferring solvent from the source to the container for mixing the solutions of the specified molarity M within the container;

(d) means for calculating TW wherein TW is the combined weight of solvent plus solute necessary to make the solution;

(e) means for calculating TW−W; and

(f) means responsive to the means for calculating TW−W for controlling the flow of solvent between the source and the container, the means for controlling causing the flow of solvent into the container to occur when TW>W and to stop when TW=W.

4,469,147

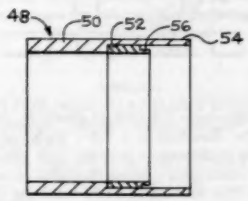
NON-INFLUENCING SPOUT FOR A WEIGHING FEED SYSTEM

Will G. Durant, 148 N. C St., Tustin, Calif. 92680

Filed Apr. 26, 1982, Ser. No. 371,751

Int. Cl.³ B65B *1/32*

U.S. Cl. 141—83 **3 Claims**



1. In a spout apparatus of the type used for filling and weighing a bag with particulate material and having a pair of coaxial tubes, the inner tube of which is a filling tube for conveying the particulate material from a source to the bag and the outer tube of which is a weighing tube supporting the bag as it is being filled and connected to a scale for concurrently weighing the bag; an improved sealing apparatus for prevention of the accu-

mulation of the particulate material between the tubes, the sealing apparatus comprising:

an annular seal of non-resilient material,

means on the outer surface of said filling tube for retaining an edge of said seal to said filling tube, and

means on the inner surface of said weighing tube for retaining the remaining edge of said seal to said weighing tube, said filling tube and weighing tube means having means for locating the annular mid-portion of said seal in substantially contiguous relation to the adjacent edges of said tubes, respectively,

said means on said filling tube comprising a retainer ring coaxially affixed to the outer surface of said filling tube and having a ring portion of reduced thickness extending toward and terminating adjacent the exit end of said filling tube whereby to form a first cylindrically shaped gap for receiving an edge of said seal,

said means on said weighing tube comprising a retainer ring coaxially affixed to the inner surface of said weighing tube and having a ring portion of reduced thickness extending toward and terminating adjacent the exit end of said weighing tube whereby to form a second cylindrically shaped gap for receiving the remaining edge of said seal,

said means for locating comprising a gathering on said filling tube and an O-ring on said weighing tube,

the gathering being selectively drawn taut around the periphery of said filling tube within said first cylindrically shaped gap for securing said seal to said filling tube, and

the O-ring being located coaxially around the inner surface of the weighing tube and being in frictional engagement with and located between said inner surface of said weighing tube and the retainer ring affixed thereto within said second cylindrically shaped gap.

4,469,148

FILLING APPARATUS FOR VISCOUS PRODUCTS

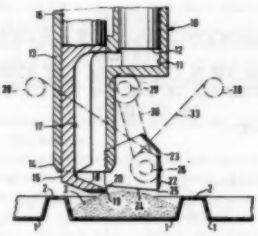
Günther Vögele, Schönaich, and Kuno Lemke, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,185

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130537

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—87 **8 Claims**



1. A filling apparatus for viscous products, said apparatus including a filler mouthpiece, a valve push rod operative in said mouthpiece to dispense a product from said filler mouthpiece, a squirt interceptor-droplet receiving element disposed relative to said filler mouthpiece, said receiving element being formed as a scoop member, said scoop member being movable relative to said filler mouthpiece to assume a substantially vertical first position at which position said scoop prevents squirting of products dispensed from said valve push rod and said scoop member being movable from said first position to a second, substantially transverse position relative to said mouthpiece in which said scoop passes below said filler mouthpiece to catch any droplets which may drop from said filler mouthpiece and said valve push rod has a lateral outlet directed toward said scoop.

4,469,149

MONITORED DELIVERY SYSTEMS

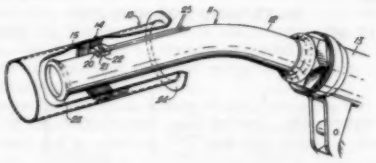
Laurence J. Walkey, Frome; Anthony J. Woolf, Amersham, and George S. Ballard, Swaffham Bulbeck, all of England, assignors to Monitronix Systems Limited, Bath, England

Filed Jun. 18, 1982, Ser. No. 390,037

Claims priority, application United Kingdom, Jun. 23, 1981, 8119276

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—94 **8 Claims**



6. A system for dispensing liquid fuel to vehicles, said system comprising:

a fuel delivery conduit having a dispensing nozzle;

an optical data reader carried by said dispensing nozzle;

optical data providing means for mounting on a vehicle to provide data identifying that said vehicle;

said vehicle provided with a fuel tank having a tubular entry port for reception of said dispensing nozzle during fuel dispensing, said tubular entry port having an inlet, a longitudinal axis and an inner circumferential surface;

said optical data providing means comprising an active optical data transmitter disposed on said inner circumferential surface at a position spaced down from said inlet within said tubular entry port;

a source of vehicle identifying data disposed on said vehicle remote from said tank, and means connecting said source to said active optical data transmitter;

said active optical data transmitter extending circumferentially of said inner circumferential surface generally perpendicular to said longitudinal axis of said tubular entry port;

said optical data reader comprising an optical data receiver adapted to receive data optically transmitted by said active optical data transmitter;

said optical data reader positioned on and extending circumferentially of said dispensing nozzle to receive said optically transmitted data upon longitudinal insertion of said dispensing nozzle into a predetermined safe fuel dispensing position within said tubular entry port, said circumferentially extending disposition of both said active optical data transmitter and said optical data receiver permitting said data receiption at any relative angular orientation of the dispensing nozzle within a range about said longitudinal axis of said tubular entry port.

4,469,150

DISPENSER FOR AUTOMATICALLY DISPENSING A BEVERAGE OR LIQUID FOOD INTO TAKE-AWAY RECIPIENTS

Pierre-François A. Grimaldi, 41, Cours Napoléon, Ajaccio - 20000, France

Filed Apr. 23, 1982, Ser. No. 371,267

Claims priority, application France, May 5, 1981, 81 09053; Nov. 5, 1981, 81 20896

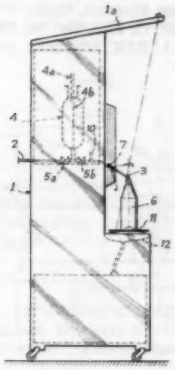
Int. Cl.³ B65B *3/04*

U.S. Cl. 141—95 **14 Claims**

11. A dispenser for automatically dispensing into takeaway receptacles of variable dimensions a very accurate volume of

liquid which is stored in bulk in at least one tank, said dispenser including a cabinet having at least one dispensing unit, each unit comprising:

a mobile spout which is connected to said tank via an electrovalve and which comprises means for automatically returning said spout towards a rest position, and a microswitch actuated by said spout when the latter is in said rest position;



a flow meter which is placed upstream of said electrovalve;

a level sensor which is placed near an end of said mobile spout and which automatically controls closure of said electrovalve when it detects the presence of liquid;

a switch which controls opening of said electrovalve when it is manoeuvered by a customer, and means for supplying a ticket indicating the volume and/or the price of the volume of liquid dispensed.

4,469,151

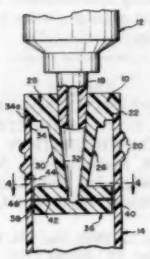
FLUID LAYERING DEVICE

Billie J. Wilson, and Jack C. Wilson, both of 3620 NW. 178th Ave., Portland, Oreg. 97229

Filed Jun. 7, 1982, Ser. No. 385,848

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—286 **7 Claims**



1. In combination with a liquid dispenser having a nozzle tip through which liquid is ejected under controlled pressure,

an upright, open-top, centrifuge tube, and

a fitting establishing a connection between the dispenser and tube for producing a layer of the liquid ejected from the dispenser formed on a denser liquid contained in the centrifuge tube,

said fitting comprising a cap portion releasably secured to the top of the centrifuge tube, the cap portion having means centering the cap portion on the top of the tube,

said fitting further comprising a nozzle portion held by the fitting below the top of the tube, said nozzle portion having an outer face disposed in spaced confronting relation to the inner wall of the tube and a flow-constricting bore with an outer end opening to said face and extending radially inwardly from said face toward the interior of the tube,

said fitting further having a passage opening at the top of the fitting and extending downwardly through the cap portion, the nozzle tip of the dispenser extending downwardly into and snugly seating within said passage,

said flow-constricting bore at its inner end connecting with said passage,

said outer face of said nozzle being spaced from the inner wall of the tube a clearance distance which produces a controlled-flow ribbon of liquid extending down the wall of the tube from liquid ejected from the dispenser and passing through said passage and through said flow-constricting bore, which ribbon of liquid continues onto the upper surface of the denser liquid within the tube.

4,469,152

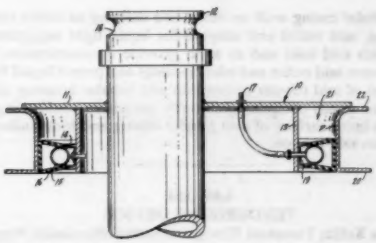
DUST-TIGHT HATCH CLOSURE ASSEMBLY

Carl L. Hardee, and Robert E. Wagner, both of Ottawa, Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Oct. 25, 1979, Ser. No. 88,241

Int. Cl.³ B67C *5/37*

U.S. Cl. 141—312 **1 Claim**



1. A dust-tight hatch closure comprising an assembly of a lid, fill tube extending through said lid and joined thereto in a vapor-tight seal relationship, cylindrical support member joined to said lid in a vapor-tight relationship and surrounding said fill tube, outwardly-directed channel member attached to and surrounding said cylindrical support member, said channel member being a tire rim, an inflatable annulus surrounding and received by said channel member, said inflatable annulus being an inner tube, a protective covering surrounding said annulus and engaging said channel member, said protective covering being a tire, and means for inflating and deflating said inflatable annulus.

4,469,153

APPARATUS FOR MIXING AND DISPENSING LIQUIDS

Milton J. Morrisette, Ashland, Mass., assignor to Kidde, Inc., Saddle Brook, N.J.

Filed May 15, 1981, Ser. No. 263,873

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—364 **19 Claims**

1. Apparatus for combining, mixing and dispensing liquids, said apparatus comprising:

a tubular housing with an inlet end defining an inlet opening;

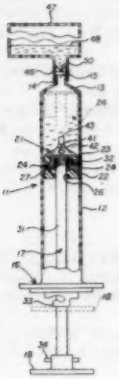
a rod extending through an opposite end of said housing and longitudinally movable therein, said rod comprising an elongated rod portion having a length at least substantially as great as the length of said housing;

a sealing means secured to for movement with an inner end

of said rod, said sealing means adapted to contact said inlet end and to fluid tightly seal said inlet opening;

a plunger having an outer periphery conforming to an inner wall of said housing, said plunger defining a passage providing a liquid tight seal around said elongated rod portion while accommodating said longitudinal movement thereof;

coupling means operable to secure said plunger to said rod for movement therewith;



a tubular casing with an outlet end defining an outlet opening, said outlet end adapted for liquid tight engagement with said inlet end so as to provide communication between said outlet and inlet openings and permit liquid flow out of said tubular casing into said tubular housing; and

piston means comprising an outer periphery conforming to an inner surface of said tubular casing and longitudinally movable therein.

4,469,154

TENDERIZING DEVICE

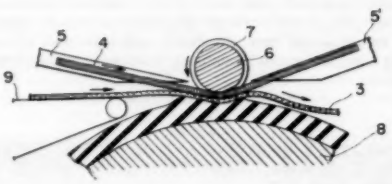
Masaru Koike; Yasumasa Hasegawa; Satoru Shimosaka; Nagara Aoyama, and Toshihiko Yoshizumi, all of Ohbu, Japan, assignors to Meinan Machinery Works, Inc., Ohbu, Japan

Division of Ser. No. 176,995, Aug. 11, 1980,. This application Sep. 28, 1982, Ser. No. 425,925

Claims priority, application Japan, Aug. 20, 1979, 54-106408; Dec. 8, 1979, 54-159423

Int. Cl.³ B27L *5/02*

U.S. Cl. 144—2 R **12 Claims**



1. A tenderizing device for a veneer sheet being fed in a predetermined direction, comprising a plurality of parallel extensible elongated members extending in said predetermined direction in contact with said veneer sheet being fed and movable along therewith, a freely rotatable roller having the outer periphery thereof covered with an elastic member, said roller being disposed such that the elastic member defines a veneer sheet passageway in cooperation with the extensible members, and means for pressing the extensible members and the veneer sheet towards the roller to bend the extensible members so as to form a convex configuration in contact with said veneer sheet, each of the extensible members having opening means to open on a veneer side thereof, when the extensible members are bent.

4,469,155

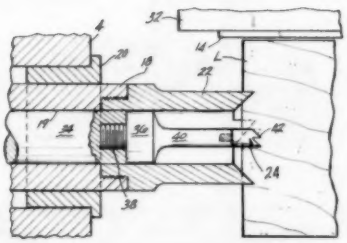
APPARATUS FOR PEELING SMALL LOGS

Sterling B. Platt, Stamford, Conn., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 15, 1982, Ser. No. 450,014

Int. Cl.³ B27C *7/04*; B27L *5/00*

U.S. Cl. 144—209 R **6 Claims**



5. A log peeling lathe for peeling logs to form veneer sheet, said lathe comprising:

(a) an outer spindle rotatably mounted on said lathe, said outer spindle having a bore, and said outer spindle being mounted for axial reciprocal movement on the lathe;

(b) an outer dog mounted on an end of said outer spindle, said outer dog being approximately the same diameter as said outer spindle and having a toothed end for imbedment in a log;

(c) an inner spindle rotatably mounted on said lathe, said inner spindle being disposed within said bore of outer spindle, and said inner spindle having a diameter which is approximately equal to the diameter of said bore; and

(d) an inner dog removably mounted on an end of said inner spindle, said inner dog having an elongated shank having a diameter which is substantially smaller than the diameter of said outer spindle bore, said elongated shank having a toothed end for imbedment in a log, said toothed end of said inner dog being approximately coexistant with said toothed end of said outer dog when both of said dogs are embedded in a log.

4,469,156

METHOD AND APPARATUS FOR SHAPING WOOD MATERIAL INTO A PREDETERMINED CONFIGURATION

Misato Norimoto, 140, Matsukage-cho, Marutamachi Aguru, Teramachidori, Kamigyo-ku, and Kenji Hasegawa, 4-44, Kitasakurazuka 3-chome, Toyonaka-shi, Osaka-fu, both of Japan

Filed Sep. 12, 1980, Ser. No. 186,656

Int. Cl.³ B27M *1/00*

U.S. Cl. 144—380 **15 Claims**

1. A method for shaping a wood material into a predetermined configuration which comprises the steps of

bringing the wood material into a substantially water saturated state;

heating the water saturated wood material to a predetermined temperature;

deforming the wood material into said predetermined configuration, and

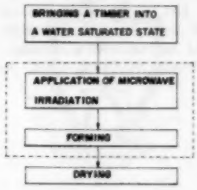
drying the wood material,

wherein the heating of the water saturated wood material is accomplished through the use of microwave energy.

10. An apparatus for shaping a wood material into a predetermined configuration which comprises

a chamber,

microwave generating means operatively associated with said chamber for heating the wood material,



means disposed within said chamber for supporting the wood material to be deformed,

means for bending the wood material into said predetermined or deformed shape, and

means for drying the wood material.

4,469,157

PNEUMATIC TIRE

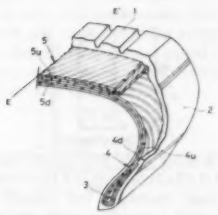
Tsuneo Morikawa, and Kazuyuki Kabe, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

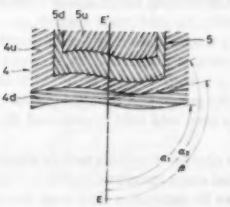
Filed Dec. 15, 1981, Ser. No. 330,824

Claims priority, application Japan, Dec. 29, 1980, 55-188602

Int. Cl.³ B60C *9/04, 9/20*

U.S. Cl. 152—354 R **4 Claims**





1. In a pneumatic tire comprising a tread, a carcass cord layer and at least two belt reinforcing layers disposed between said tread and said carcass cord layer, the reinforcing cord of one of said belt reinforcing layers having an angle of 15 to 30 degrees with respect to the tire circumferential direction and the reinforcing cord of the other of said belt reinforcing layers having an angle of 150 to 165 degrees with respect to the tire circumferential direction, the improvement wherein said carcass cord layer consists of a laminate of upper and lower carcass cord layers, and the average value $\frac{1}{2}(\alpha_1+\alpha_2)$ of the angle α_2 of the reinforcing cord of said upper carcass cord layer adjacent said belt reinforcing layers with respect to the tire circumferential direction and the angle α_1 of the reinforcing cord of said lower carcass cord layer with respect to the tire circumferential direction is from 96 to 108 degrees and their difference $(\alpha_2-\alpha_1)$ is from 10 to 40 degrees, with the proviso that the angles α_1 and α_2 are measured from the side in which the reinforcing cord of said belt reinforcing layer adjacent said upper carcass cord layer with respect to the tire circumferential direction describes an acute angle.

4,469,158

PNEUMATIC TIRE

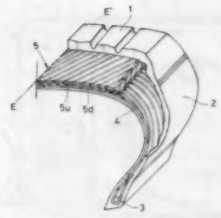
Kazuyuki Kabe, and Tsuneo Morikawa, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

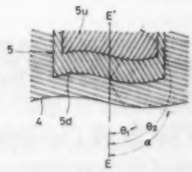
Filed Dec. 15, 1981, Ser. No. 330,825

Claims priority, application Japan, Dec. 29, 1980, 55-188603

Int. Cl.³ B60C *9/04, 9/20*

U.S. Cl. 152—354 R **4 Claims**





1. In a pneumatic tire comprising a tread, a carcass cord layer and at least two belt reinforcing layers disposed between said tread and said carcass cord layer, the reinforcing cord of one of said belt reinforcing layers having an angle of 15° to 30° with respect to the circumferential direction of said tire and the reinforcing cord of the other of said belt reinforcing layers having an angle of 150° to 165° with respect to the circumferential direction of said tire, the improvement wherein said carcass cord layer consists of only one layer, and the reinforcing cord of said carcass cord layer is disposed in such a relation as to cross the reinforcing cord of said belt reinforcing layer adjacent said carcass cord layer and to have an angle of 66° to 82° with respect to the circumferential direction of said tire when measured from the side in which the angle of the reinforcing cord of said belt reinforcing layer adjacent said carcass cord layer has an acute angle with respect to the circumferential direction of said tire.

4,469,159

AWNING

Viktor Lohausen, Goldmuhlestrasse 9912, 7032 Sindelfingen, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,754

Int. Cl.³ E04F *10/06*

U.S. Cl. 160—22 **42 Claims**

1. An awning take-up arrangement, having

a fabric roll on which an awning fabric can be wound,

at least one hinged bracket arrangement movable between

an extended position and a retracted position, having an upper arm and a lower arm connected to one another in hinged fashion,

a hinged joint member to which the upper bracket arm is attached and which is tiltable around a horizontal axis,

a setter with two ends for the tilt angle of the hinged joint member,

a drop bar to which the lower bracket arm is attached and to which one end of the awning fabric is fastened,

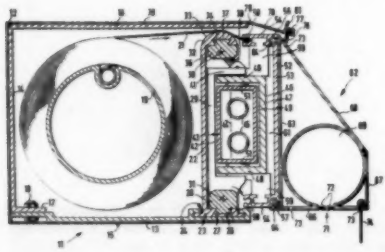
a fabric guide for glide supporting the awning fabric in the area above the hinged joint member,

and the improvement comprising:

a base member on the take-up arrangement,

a continuous center carrier located in fixed position on the base member in a longitudinal direction parallel to the fabric roll, and having a free end and another end,

the hinged joint member being attached in tiltable fashion on the fixed center carrier,



the fabric guide being located on the free end of the center carrier and facing away from the base member,

the setter being located with one end at the free end of the center carrier and with its other end on the hinged joint member,

the upper bracket arm having a substantially rectangular cross section,

the lower bracket arm having a U-profile cross section, with outer shanks which are spaced apart slightly larger than the cross section of the upper bracket arm,

the hinged joint member having a U-profile cross section comprising a base shank with outer shanks which are spaced apart larger than the cross section of the U-profile lower bracket arm,

wherein, when the hinged bracket arrangement is in a retracted position, the lower bracket arm overlaps the upper bracket arm and the hinged joint member overlaps the lower bracket arm adjacent to the center carrier, in a form-fitting manner.

4,469,160

SINGLE CRYSTAL SOLIDIFICATION USING MULTIPLE SEEDS

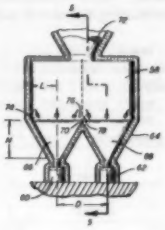
Anthony F. Giamei, Middletown, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1981, Ser. No. 333,600

Int. Cl.³ B22D *27/04, 15/00*

U.S. Cl. 164—122.1 **4 Claims**

1. The method of directionally solidifying a single crystal structure cast part from molten metal contained in a mold, comprised of providing at least two seeds within the mold; causing separate solidification interfaces to move from each seed simultaneously through the molten metal, so that the solidification interfaces from adjacent seeds merge to form a unitary solidification interface; and, causing the unitary solidification interface to move through the remainder of the molten metal in the mold, wherein adjacent seeds are crystallographically oriented with respect to one another within an angular limit which is less than the critical crystallographic mismatch angle for the metal, wherein the critical crystallographic mismatch angle is the angle beyond which the tensile ductility in



a casting transverse to the direction in which the interfaces were caused to move is reduced to less than 50% of the same property in a casting with zero mismatch angle.

4,469,161

METHOD OF AND MOULD FOR MAKING A CAST SINGLE CRYSTAL

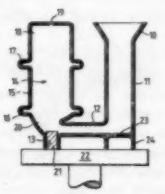
Gordon J. S. Higginbotham, Darley Abbey; John R. Marjoram, Coxbench, and Frederick J. Horrocks, Spondon, all of England, assignors to Rolls-Royce Limited, London, England

Filed Dec. 13, 1982, Ser. No. 449,529

Claims priority, application United Kingdom, Dec. 23, 1981, 8138761

Int. Cl.³ B22D *25/00;* **B22C** *9/08, 9/04*

U.S. Cl. 164—122.2 **11 Claims**



1. A method of making a cast single crystal comprising the steps of:

(a) providing a mould having a main mould cavity and an entry aperture of said main mould cavity,

(b) mounting a seed crystal in or adjacent to said entry aperture, the mould and the seed crystal resting on a chill adapted to cool said seed crystal and the bottom of said mould

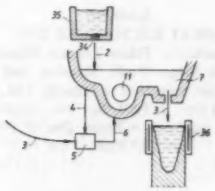
(c) pouring a charge of suitable molten metal into said mould through said entry apertures in such a way that the molten metal flows in succession first over the seed crystal and then into said main mould cavity thereby imparting sufficient heat to raise the mould and seed crystal tip to a temperature above the melting point of the metal, and causing progressive solidification of the molten metal from said seed crystal towards the opposite extremity of the mould.

5. A mould for use in the manufacture of a cast single crystal, said mould comprising a main cavity, an entry aperture for said main mould cavity, a seed cavity adapted to hold a seed crystal in or adjacent to said entry aperture, the seed crystal cavity being located in or adjacent to said entry aperture so as to allow flow firstly over said seed crystal tip and then into the main mould cavity, and passage means adapted to allow the flow of molten metal over said seed crystal and into said main mould cavity.

4,469,162
CONTINUOUS CASTING TEMPERATURE CONTROL APPARATUS

Bertil Hanas, Vesteras, Sweden, and Gunter Rudolph, Jork, Fed. Rep. of Germany, assignors to Asea Akt, Vesteras, Sweden

Continuation of Ser. No. 291,872, Aug. 10, 1981, abandoned, which is a continuation of Ser. No. 47,642, Jun. 11, 1979, abandoned. This application Nov. 16, 1983, Ser. No. 551,519
Claims priority, application Sweden, Jun. 13, 1978, 7806798
Int. Cl.³ B22D *11/10, 11/16*
U.S. Cl. 164—154 **5 Claims**

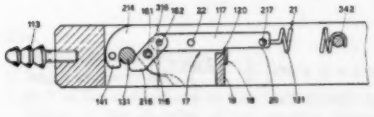


1. Continuous casting apparatus, comprising:
a melt container for retaining molten metal;
a casting mold for molding said molten metal;
an intermediate ladle connected between said melt container and said casting mold and including means for heating the metal therein; and
means for generating a control signal for controlling said means for heating to maintain the temperature of the molten metal at the outlet of said intermediate ladle within a specified range and including means for predicting the temperature within said melt container, means providing a signal representing the desired temperature of the molten metal delivered from said intermediate ladle to said casting mold, means for comparing said predicted temperature and said desired temperature signal to generate a difference signal, and means responsive to said difference signal to generate said control signal.

4,469,163
DUMMY BARS EMPLOYING A QUICKLY AND AUTOMATICALLY DETACHABLE END

Luciano Klaucic, Roschi Dei Legionari, Italy, assignor to Danieli & C. Officine Meccaniche SpA, Italy

Filed May 20, 1982, Ser. No. 380,235
Claims priority, application Italy, May 27, 1981, 83395 A/81
Int. Cl.³ B22D *11/08*
U.S. Cl. 164—446 **10 Claims**

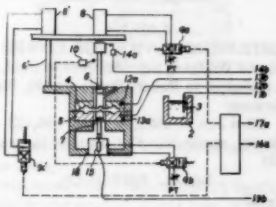


1. A dummy bar, comprising:
a body portion, two side portions and an end portion having a hook means of a width smaller than the bar and a lodgement groove of less width than said end portion stretching lengthwise in said dummy bar to define spaced side portions,
a detachable head having two ends, one end carrying a means for attachment to a billet and the opposite end defining a vertical groove to form spaced sided containing an inside horizontal crosswise attachment pin, said groove permitting the lodgement of said hook portion of the dummy bar over said attachment pin,
abutting means on lower parts of said side portions of said dummy bar and said sides of said head which enable said detachable head to rotate in one direction in relation to said side portions,
latch means pivotable within said lodgement groove and capable of closing from below against said attachment pin, elongated means hinged at one end to said latch means, and tension spring means connected at one end to the other end of the elongated means and at the other end to the dummy bar.

4,469,164
METHOD OF AND APPARATUS FOR INSPECTING THE QUALITY OF A CASTING PRODUCED BY A DIE-CASTING MACHINE

Soichi Ishikawa, Nagoya, and Masaaki Tokui, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 5, 1982, Ser. No. 375,015
Claims priority, application Japan, May 15, 1981, 56-73095
Int. Cl.³ B22D *17/00*
U.S. Cl. 164—457 **9 Claims**



1. A method of inspecting the quality of a casting produced by a die-casting machine having a plunger tip and a counterplunger tip, comprising the steps of measuring the speed of movement of said plunger tip and the amount of displacement of said counterplunger tip upon die casting under pressure, measuring an interval of time required for the amount of displacement of said counterplunger tip to reach a predetermined value after the speed of movement of said plunger tip has reached a predetermined value, and ascertaining whether said interval of time falls within a predetermined range to determine the quality of the casing for acceptability.

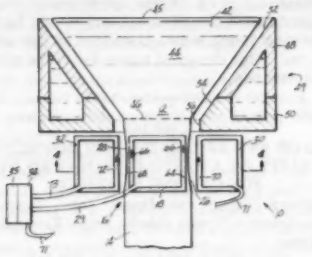
4,469,165
ELECTROMAGNETIC EDGE CONTROL OF THIN STRIP MATERIAL

Gary L. Ungarean, Woodbridge, and John C. Yarwood, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 7, 1982, Ser. No. 386,132
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—467 **17 Claims**

1. In a casting apparatus comprising:
means for forming molten thin strip material having a thickness less than about 0.1" into a desired thin strip shape, said forming means comprising:
means for generating an image current loop near the edges of said molten strip, said image current loop generating means comprising:
means for generating first and second magnetic fields on either side of said molten thin strip material, each of said first and second magnetic fields interacting with said thin strip material to induce an image current into said molten strip which are additive to each other to induce said image current loop, said means for generating said first and second magnetic fields comprising first and second loop type inductors; and
means for acting upon said image current loop near the first and second edges of said molten strip for creating a force

which acts to increase the width of said strip, said force creating means comprising means for generating third and



fourth magnetic fields, said third and fourth magnetic field generating means comprising respectively third and fourth inductors.

4,469,166

AIR CONDITIONING DEVICE FOR POWER VEHICLE

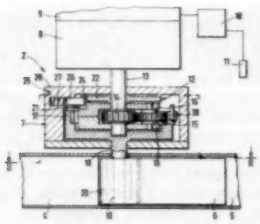
Jörg Aschoff, and Wolfgang Scheidel, both of Buhl, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 8, 1982, Ser. No. 386,423

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133639

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—25 **15 Claims**



1. An air conditioning device, particularly an air heating device for a power vehicle, comprising a control member; an electric motor operable in two directions of rotation and connectable with said control member so as to drive the latter; a planetary transmission arranged between said electric motor and said control member and including a first shaft driven by said electric motor, a second shaft fixedly connected with said control member, two planetary transmission elements including a hollow wheel and a planetary wheel carrier all supported rotatably; a spring actuated arresting member engageable with one of said transmission elements for preventing the same from rotation so that a rotation of said first shaft results in a rotation of said second shaft; a temperature regulator provided with a temperature sensor and switching said electric motor in different directions, depending upon sensing of air temperature by said temperature sensor; and manual adjusting means for selectively adjusting said control member, independently from adjustment by said electric motor, said manual adjusting means including a turnable adjusting lever which is formed and arranged so that said lever has a neutral position, when said lever is turned from said neutral position said arresting member is engaged and said one transmission element is loosely rotatable for interrupting the connection between said first shaft and said second shaft, and after engaging said arresting member said manual adjusting means engage with the other of said transmission elements which is continuously fixedly connected with said second shaft for adjusting said control member independently from whether and in which direction said electric motor rotates.

4,469,167

HEAT EXCHANGER FIN

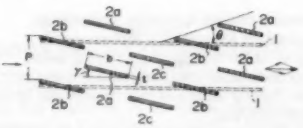
Masaaki Itoh, Tsuchiura; Takeo Tanaka; Masakatsu Hayashi, both of Ibaraki; Mitsuo Kudo, Shimizu, and Akira Tomita, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,814

Claims priority, application Japan, Dec. 3, 1980, 55-169565

Int. Cl.³ F28D *1/04*

U.S. Cl. 165—151 **4 Claims**



1. A heat exchanger fin for use in a heat exchanger of the type having a plurality of fins arranged substantially in parallel with a direction of air flow, the air flowing through a space between adjacent fins, said fins comprising a plurality of louvers cut and raised in a bridge-like form therefrom substantially perpendicular to the direction of said air flow, said louvers dividing said space between adjacent fins in a heightwise direction into n sections wherein $n \geqq 3$, said louvers being inclined to a direction of air flow at a small attack angle, at least one of the louvers of each of said fins being cut and raised in such a manner that one end of the louver is positioned above an upper surface of the fin and a second end is positioned below a lower surface of the fin to divide the air flow into a flow above and below the louver, at least another one of the louvers of each said fins being cut and raised in such a manner that both ends are positioned above the upper surface of the fin, and at least one other of the louvers being cut and raised in such a manner that both ends of said louver are positioned below the lower surface of the fin, and wherein said attack angle γ (degrees) is determined to satisfy the following condition:

$$\sin \gamma = (t + \delta^*)\left(\frac{1}{b} - \frac{2 \tan \theta}{P}\right),$$

where,

$$\tan \theta = \frac{P}{nb},$$

$$\delta^* = 1.72 \frac{1}{\sqrt{Re}},$$

$$Re = \frac{ub}{\nu},$$

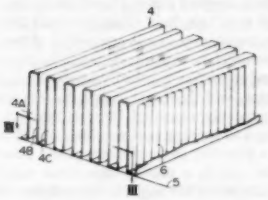
wherein,

t represents a thickness (m) of a fin, b represents the breadth (m) of a fin, P represents the pitch (m) of the fins, u represents the flow velocity (m/sec) of air and ν represents the kinematic viscosity (m^2/S) of air.

4,469,168
FIN ASSEMBLY FOR HEAT EXCHANGERS

Masaaki Itoh, Tsuchiura; Mitsuo Kodoh, Shimizu; Akira Tomita, Mito; Masakatsu Hayashi, and Takeo Tanaka, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 238,040
Claims priority, application Japan, Feb. 27, 1980, 55-22746
Int. Cl.³ F28D 1/02
U.S. Cl. 165—152 5 Claims



1. A fin assembly arranged in a region between end portions of an inlet side and an outlet side of a gas flow in heat exchanger tubes, the fin assembly having a plurality of fins, each fin having a plurality of louvers cut-out and raised from a major planar surface thereof and into which assembly the gas flows in a direction substantially perpendicular to a plane connecting inlet side ends of the fins, said louvers including longitudinally extending edges directed toward the gas flow substantially at right angles to the direction of the gas flow, said fins are inclined at an angle θ in one direction to the direction of the gas flow into said fin assembly, and said louvers are inclined at an angle γ to the direction of the gas flow into the fin assembly, in the opposite direction to the direction of inclination of the fins, said angles θ and γ are respectively between 90° and 0° and are selected to meet the following conditions:

$$\text{Sin } 2\gamma = 2(t + \delta^*) \cdot \left(\frac{1}{b} - \frac{2 \text{ Sin}\theta}{l}\right) .$$

where,

t: wall thickness of fins (m);

b: length of louver (m);

l: pitch of fins as measured on a line substantially perpendicular to the direction of the entering flow of gas connecting the ends of the fins (m);

θ: inclination angle of fin to the direction of entering flow of gas (degree);

γ: inclination angle of louver to the direction of entering flow of gas (degree);

δ^*: displacement thickness at rear end of louver

$$= 1.72 \frac{b}{\sqrt{Reb}} ;$$

Reb: Reynolds number of louver $(u \cdot b)/\nu$;

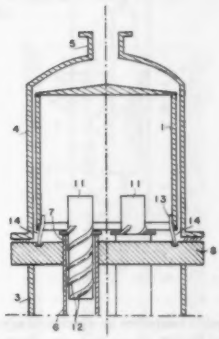
u: flowing velocity of gas (m/sec); and

ν: kinetic viscosity of gas (m^2/sec).

4,469,169
DISTRIBUTION DEVICE FOR MULTITUBULAR EXCHANGERS

Roland Kotwica, Pont Ste Maxence, France, assignor to Societe Chimique des Charbonnages-CDF Chimie, Paris, France

Filed Jun. 15, 1982, Ser. No. 388,698
Claims priority, application France, Jun. 15, 1981, 81 11696
Int. Cl.³ F28F 9/02
U.S. Cl. 165—174 9 Claims



1. A falling film multitubular heat exchanger comprising:

(a) an outer shell;

(b) a nonforaminous axially disposed entry header for admitting a fluid to the interior of said heat exchanger;

(c) at least two vertically oriented tubes contained within said outer shell;

(d) an entry channel in said outer shell in flow communication with said entry header and the interior of said tubes;

(e) a distribution plate disposed perpendicularly to and surrounding the entrance ends of said tubes, thereby isolating said entry channel from the exterior of said tubes, wherein said entrance ends of said tubes are located at a first height above said distribution plate; and

(f) a distribution cap located in said entry channel above said distribution plate, said cap consisting of cylindrical sidewalls and a closed top having sides that slope downwardly toward the cylindrical sidewalls, and being positioned so that said entrance ends of each of said tubes are situated inside the circumference of said sidewalls of said cap and wherein the bottom of said sidewalls is located at a second height, higher than said first height, above said distribution plates, wherein the diameter of said entry header is smaller than the diameter of said cap, and wherein at least one orifice is formed between the bottom of said sidewalls and said distribution plate whereby a liquid introduced into the entry header and the channel strikes the closed top, trickles down over the outside of the closed top of the cap and then down the sidewalls between the sidewalls and the outer shell and onto the distribution plate before passing into the tubes to achieve a more uniform distribution of the liquids in the tubes.

4,469,170
LIQUID SKIMMER APPARATUS

Verne E. Farmer, Jr., Houston, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

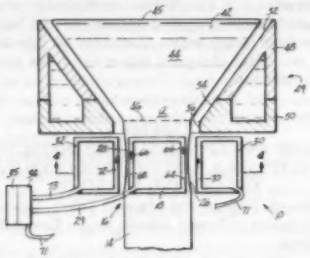
Filed Mar. 2, 1982, Ser. No. 353,795
Int. Cl.³ E21B 43/38; E02B 15/04
U.S. Cl. 166—53 10 Claims

1. Skimmer apparatus for removing an overlying lighter liquid from an underlying heavier liquid in a well comprising:

a float adapted to float in said two liquids;

a receptacle connected to said float, one end of said recepta-

which acts to increase the width of said strip, said force creating means comprising means for generating third and



fourth magnetic fields, said third and fourth magnetic field generating means comprising respectively third and fourth inductors.

4,469,166

AIR CONDITIONING DEVICE FOR POWER VEHICLE

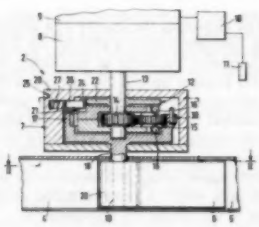
Jörg Aschoff, and Wolfgang Scheidel, both of Buhl, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 8, 1982, Ser. No. 386,423

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133639

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—25 **15 Claims**



1. An air conditioning device, particularly an air heating device for a power vehicle, comprising a control member; an electric motor operable in two directions of rotation and connectable with said control member so as to drive the latter; a planetary transmission arranged between said electric motor and said control member and including a first shaft driven by said electric motor, a second shaft fixedly connected with said control member, two planetary transmission elements including a hollow wheel and a planetary wheel carrier all supported rotatably; a spring actuated arresting member engageable with one of said transmission elements for preventing the same from rotation so that a rotation of said first shaft results in a rotation of said second shaft; a temperature regulator provided with a temperature sensor and switching said electric motor in different directions, depending upon sensing of air temperature by said temperature sensor; and manual adjusting means for selectively adjusting said control member, independently from adjustment by said electric motor, said manual adjusting means including a turnable adjusting lever which is formed and arranged so that said lever has a neutral position, when said lever is turned from said neutral position said arresting member is engaged and said one transmission element is loosely rotatable for interrupting the connection between said first shaft and said second shaft, and after engaging said arresting member said manual adjusting means engage with the other of said transmission elements which is continuously fixedly connected with said second shaft for adjusting said control member independently from whether and in which direction said electric motor rotates.

4,469,167

HEAT EXCHANGER FIN

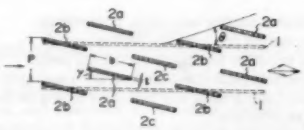
Masaaki Itoh, Tsuchiura; Takeo Tanaka; Masakatsu Hayashi, both of Ibaraki; Mitsuo Kudo, Shimizu, and Akira Tomita, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,814

Claims priority, application Japan, Dec. 3, 1980, 55-169565

Int. Cl.³ F28D *1/04*

U.S. Cl. 165—151 **4 Claims**



1. A heat exchanger fin for use in a heat exchanger of the type having a plurality of fins arranged substantially in parallel with a direction of air flow, the air flowing through a space between adjacent fins, said fins comprising a plurality of louvers cut and raised in a bridge-like form therefrom substantially perpendicular to the direction of said air flow, said louvers dividing said space between adjacent fins in a heightwise direction into n sections wherein $n \geqq 3$, said louvers being inclined to a direction of air flow at a small attack angle, at least one of the louvers of each of said fins being cut and raised in such a manner that one end of the louver is positioned above an upper surface of the fin and a second end is positioned below a lower surface of the fin to divide the air flow into a flow above and below the louver, at least another one of the louvers of each said fins being cut and raised in such a manner that both ends are positioned above the upper surface of the fin, and at least one other of the louvers being cut and raised in such a manner that both ends of said louver are positioned below the lower surface of the fin, and wherein said attack angle γ (degrees) is determined to satisfy the following condition:

$$\sin \gamma = (t + \delta^*)\left(\frac{1}{b} - \frac{2 \tan \theta}{p}\right),$$

where,

$$\tan \theta = \frac{P}{nb},$$

$$\delta^* = 1.72 \frac{1}{\sqrt{Re}},$$

$$Re = \frac{ub}{\nu},$$

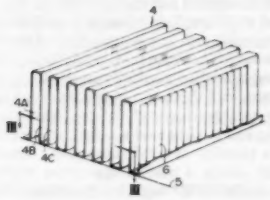
wherein,

t represents a thickness (m) of a fin, b represents the breadth (m) of a fin, P represents the pitch (m) of the fins, u represents the flow velocity (m/sec) of air and ν represents the kinematic viscosity (m^2/S) of air.

4,469,168
FIN ASSEMBLY FOR HEAT EXCHANGERS

Masaaki Itoh, Tsuchiura; Mituo Kodoh, Shimizu; Akira Tomita, Mito; Masakatsu Hayashi, and Takeo Tanaka, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 238,040
Claims priority, application Japan, Feb. 27, 1980, 55-22746
Int. Cl.³ F28D 1/02
U.S. Cl. 165—152 5 Claims



1. A fin assembly arranged in a region between end portions of an inlet side and an outlet side of a gas flow in heat exchanger tubes, the fin assembly having a plurality of fins, each fin having a plurality of louvers cut-out and raised from a major planar surface thereof and into which assembly the gas flows in a direction substantially perpendicular to a plane connecting inlet side ends of the fins, said louvers including longitudinally extending edges directed toward the gas flow substantially at right angles to the direction of the gas flow, said fins are inclined at an angle θ in one direction to the direction of the gas flow into said fin assembly, and said louvers are inclined at an angle γ to the direction of the gas flow into the fin assembly, in the opposite direction to the direction of inclination of the fins, said angles θ and γ are respectively between 90° and 0° and are selected to meet the following conditions:

$$\text{Sin } 2\gamma = 2(t + \delta^*) \cdot \left(\frac{1}{b} - \frac{2 \text{ Sin}\theta}{l}\right) .$$

where,

t: wall thickness of fins (m);
b: length of louver (m);
l: pitch of fins as measured on a line substantially perpendicular to the direction of the entering flow of gas connecting the ends of the fins (m);
θ: inclination angle of fin to the direction of entering flow of gas (degree);
γ: inclination angle of louver to the direction of entering flow of gas (degree);
δ^*: displacement thickness at rear end of louver

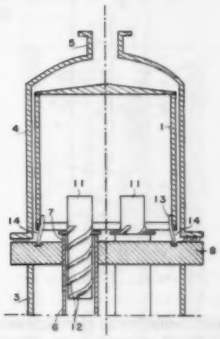
$$= 1.72 \frac{b}{\sqrt{Reb}} ;$$

Reb: Reynolds number of louver $(u \cdot b)/\nu$;
u: flowing velocity of gas (m/sec); and
ν: kinetic viscosity of gas (m^2/sec).

4,469,169
DISTRIBUTION DEVICE FOR MULTITUBULAR EXCHANGERS

Roland Kotwica, Pont Ste Maxence, France, assignor to Societe Chimique des Charbonnages-CDF Chimie, Paris, France

Filed Jun. 15, 1982, Ser. No. 388,698
Claims priority, application France, Jun. 15, 1981, 81 11696
Int. Cl.³ F28F 9/02
U.S. Cl. 165—174 9 Claims



1. A falling film multitubular heat exchanger comprising:
(a) an outer shell;
(b) a nonforaminous axially disposed entry header for admitting a fluid to the interior of said heat exchanger;
(c) at least two vertically oriented tubes contained within said outer shell;
(d) an entry channel in said outer shell in flow communication with said entry header and the interior of said tubes;
(e) a distribution plate disposed perpendicularly to and surrounding the entrance ends of said tubes, thereby isolating said entry channel from the exterior of said tubes, wherein said entrance ends of said tubes are located at a first height above said distribution plate; and
(f) a distribution cap located in said entry channel above said distribution plate, said cap consisting of cylindrical sidewalls and a closed top having sides that slope downwardly toward the cylindrical sidewalls, and being positioned so that said entrance ends of each of said tubes are situated inside the circumference of said sidewalls of said cap and wherein the bottom of said sidewalls is located at a second height, higher than said first height, above said distribution plates, wherein the diameter of said entry header is smaller than the diameter of said cap, and wherein at least one orifice is formed between the bottom of said sidewalls and said distribution plate whereby a liquid introduced into the entry header and the channel strikes the closed top, trickles down over the outside of the closed top of the cap and then down the sidewalls between the sidewalls and the outer shell and onto the distribution plate before passing into the tubes to achieve a more uniform distribution of the liquids in the tubes.

4,469,170
LIQUID SKIMMER APPARATUS

Verne E. Farmer, Jr., Houston, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

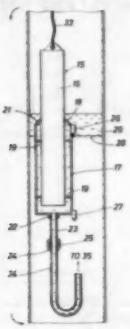
Filed Mar. 2, 1982, Ser. No. 353,795
Int. Cl.³ E21B 43/38; E02B 15/04
U.S. Cl. 166—53 10 Claims

1. Skimmer apparatus for removing an overlying lighter liquid from an underlying heavier liquid in a well comprising:
a float adapted to float in said two liquids;
a receptacle connected to said float, one end of said recepta-

cle being open for collecting said lighter liquid in said receptacle;

spaced-apart sensors attached to said receptacle for sensing the lighter-heavier liquid interface;

means for removing said ligher liquid from said receptacle in response to the level of said interface in said well;



said lighter liquid comprises an electrical non-conductor and said heavier liquid comprises an electrical conductor; means for adjusting the buoyancy of said skimmer in said liquids; and said float being closed and said receptacle forming a skirt surrounding a portion of said float.

4,469,171

WIRELINE GUIDING APPARATUS

Paul Mine, 113 Tyrona St., Lafayette, La. 70507

Filed Jun. 28, 1982, Ser. No. 392,620
Int. Cl.³ E21B *19/00, 33/08*
U.S. Cl. 166—85 **5 Claims**

1. In an oil derrick having, inter alia, a pack-off assembly, with pack-off seals mounted with a pack-off assembly, a crown block mounted at the top of the oil derrick, a cable travelling around said crown block, and a travelling block mounted to the cable, a wireline guide apparatus, comprising:

a. an elongated stationary arm means, comprised of two parallel truss means, fixedly attached at 45° angle to a collar means of said pack-off assembly and extending upwardly and outwardly therefrom;

b. an elongated swivel arm means swivelly attached at its lower end to an uppermost portion of said stationary arm means and extending upwardly and inwardly therefrom at about a 45° angle, said swivel arm means having two parallel trust means;

c. a first pulley wheel means, rotatably mounted between said truss means and supported by an upper portion of said swivel arm means, said pulley wheel receiving the wire line and guiding it vertically downwardly into said pack-off assembly coaxially with the vertical opening in the pack-off assembly;

d. a bumper means integrally connected to said upper portion of said swivel arm means for preventing any contact between said travelling block and said wire line;

e. a plurality of support plates securedly mounted between the truss means composing said arm means, two off the lower most support plates of said swivel arm means being mounted at 45° angle in relation to said truss means;

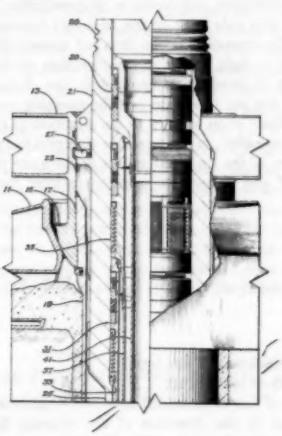
f. a third movable arm means comprised of two parallel truss means mounted between said angularly positioned support plates and extending vertically upwardly from said swivel arm means, said third arm means having a second pulley wheel rotatably mounted betwen said truss means for receiving and guiding said wireline, said third arm further having a plurality of reinforcing plates attached between said truss means, a pair of uppermost reinforcing plates being mounted at 45° angle in relation to said truss means, said third arm means being further provided with a sleeve means to cover a diagonal opening made in one of the truss means of said third arm means.

4,469,172

SELF-ENERGIZING LOCKING MECHANISM

David A. Clark, Montrose, Scotland, assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 31, 1983, Ser. No. 462,581
Int. Cl.³ E21B *33/04*
U.S. Cl. 166—115 **7 Claims**



1. In a well assembly having an outer member with an axial bore containing an upwardly facing shoulder, a hanger having a string of pipe secured to a lower end, an improved means for supporting the hanger in the outer member, comprising in combination:

a plurality of annular wicker grooves formed in the sidewall of the bore perpendicular to the axis of the bore;

a plurality of reacting grooves formed in an outer wall of the hanger, each reacting groove extending at least partially around the circumference of the outer wall and perpendicular to the axis of the hanger;

a plurality of slips spaced circumferentially apart from each other around the outer wall of the hanger, each slip having an outer wall with wicker grooves adapted to mate

with the wicker grooves of the bore, and an inner wall containing reacting grooves that mate with the reacting grooves of the hanger; and

expansion means for moving the slips between a contracted position in which a clearance exists between the wicker grooves of the bore and slips to an expanded position in which the wicker grooves of the bore and slips engage each other, the expansion means being actuated by contact with the shoulder and downward force applied to the hanger;

the reacting grooves of the hanger each having an inclined surface facing downwardly and outwardly;

the reacting grooves of the slips having oppositely facing inclined surfaces that engage the inclined surfaces of the hanger in both the contracted and expanded positions and slide outwardly with respect to the inclined surfaces of the hanger in the expanded position;

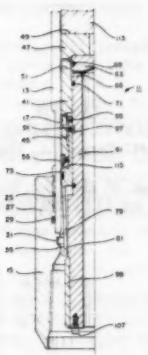
in the expanded position, the force acting on the hanger being resisted by a reaction between the inclined surfaces, which directs an outward resultant force to the slips.

4,469,173

EXPENDABLE PLUG ASSEMBLY

Bruce Gilbert, and Robert W. Evans, both of Huntsville, Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed May 9, 1983, Ser. No. 492,907
Int. Cl.³ E21B *33/12*
U.S. Cl. 166—188 **7 Claims**



1. An expendable plug assembly of the type adapted to be received within the bore of a well packer, comprising:

a shear sleeve having a generally cylindrical exterior and an interior;

a plug body initially received within said shear sleeve interior, said plug body having a closed end for preventing flow of well fluids through said well packer when said plug body is in place within said shear sleeve;

lock means for releasably supporting said plug body within said shear sleeve interior;

a collet body mounted about said plug body having a collet extension at one end thereof and a plurality of collet fingers at the opposite end thereof, said collet fingers being selectively engagable within said well packer bore to fix said plug assembly within said bore;

frangible means for releasably connecting said collet extension to said shear sleeve, said frangible means being severable by downward movement of said shear sleeve relative to said collet extension:

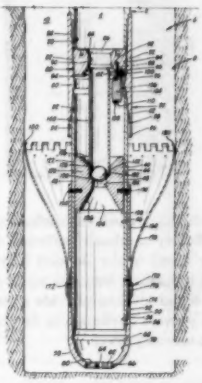
removable sleeve means adapted to be slidably received adjacent the end of said plug body opposite said closed end, said sleeve means having an upper extent adapted to be received between said plug body and said collet fingers to secure said collet fingers within said packer bore when said sleeve is in place on said plug body.

4,469,174

COMBINATION CEMENTING SHOE AND BASKET

Tommie A. Freeman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 14, 1983, Ser. No. 466,185
Int. Cl.³ E21B *33/136*
U.S. Cl. 166—202 **20 Claims**



1. A combination cementing shoe and basket, comprising:

tubular mandrel means having an exterior annular overshot, and a plurality of circumferentially spaced slots through the wall thereof;

cement basket means having end ring means and a plurality of upwardly extending stave means, said cement basket means surrounding said mandrel means and secured thereto by shear means associated with said end ring means of said cement basket means, so that the upper ends of said stave means extend under said overshot;

flapper valve means having an axial bore therethrough and a spring-biased flapper, said flapper means being secured to the interior of said mandrel means;

ball seat means slidably disposed within said mandrel means below said flapper valve means, said ball seat means having an axial bore therethrough with a ball seat therein, and shear means extending therefrom through said slots into tubular activating sleeve means surrounding said mandrel means under said cement basket means between said overshot and said end ring means; and

fillup tube means secured to said ball seat means in said axial bore thereof and extending upward therefrom into said flapper valve means bore.

4,469,175

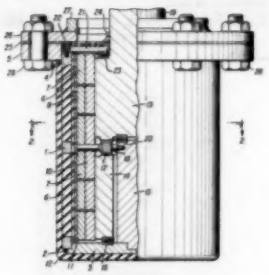
MECHANOACOUSTIC TRANSDUCER FOR USE IN TRANSMITTING HIGH ACOUSTIC POWER DENSITIES INTO GEOLOGICAL FORMATIONS SUCH AS OIL-SATURATED SANDSTONE OR SHALE

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees

Division of Ser. No. 67,727, Aug. 20, 1979, Pat. No. 4,332,017.
This application Apr. 23, 1982, Ser. No. 371,481
Int. Cl.³ E21B *43/25*
U.S. Cl. 166—249 **5 Claims**

1. A method for recovering entrapped liquid from porous or stratified geological formations which includes the following steps:

(1) drill a hole into the region containing the entrapped liquid,
(2) flood the hole with a liquid,
(3) lower a transducer of approximately cylindrical shape into the flooded hole,



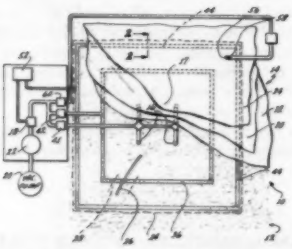
(4) drive the vibratile cylindrical surface of the transducer at a large oscillatory amplitude sufficient to generate acoustic intensity levels in the flooded hole in excess of 100 watts/in^2 of transducer vibratile surface,
(5) adjust the liquid level to provide a static pressure head sufficient to prevent cavitation in the liquid at the operating acoustic intensity level.

4,469,176

LANDFILL GAS RECOVERY SYSTEM AND METHOD WITH PRESSURE SYMMETRY

Stanley W. Zison, Irvine, and Alex Roqueta, Redondo Beach, both of Calif., assignors to Getty Synthetic Fuels, Inc., Signal Hill, Calif.

Filed Jun. 8, 1983, Ser. No. 502,093
Int. Cl.^{3} E21B *43/02, 43/12*
U.S. Cl. 166—250 35 Claims



1. A method of reducing air intrusion during the recovery of landfill gas from a landfill, comprising the steps of:
(a) providing a gas collection zone in said landfill in proximity to its surface;
(b) maintaining said collection zone at a pressure lower than the pressure of said gas in said landfill; and
(c) positioning an elongated low-impedance gas path in said landfill in proximity to its surface and to said gas collection zone, said path extending in a generally non-radial direction with respect to said gas collection zone and being spaced therefrom.

4,469,177

RECOVERY OF VISCOUS OIL FROM ASPHALTIC OIL-CONTAINING FORMATIONS

V. N. Venkatesan, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 29, 1982, Ser. No. 445,120
Int. Cl.^{3} E21B *43/24, 43/27*
U.S. Cl. 166—261 11 Claims

1. A method for recovering oil from a subterranean, viscous asphaltic oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well, said injection well being and said production well in fluid communication with a substantial portion of said formation, comprising:
(a) injecting into said formation via said injection well 0.005 to 0.05 pore volume of a solution comprising a mixture of an aromatic hydrocarbon and an acid selected from the group consisting of phenol, carboxylic acid, and acidic anhydrite, said solution containing 45 to 60 weight percent of said acid;
(b) injecting steam into the formation via said injecting well thereby causing a synergistic reduction in the viscosity of the formation oil; and
(c) continuing injecting steam and recovering fluids including oil from the formation via said production well.

4,469,178

WELL GRAVEL PACKING METHOD

James R. Solum, 16842 Baruna La., Huntington Beach, Calif. 92646

Filed Apr. 29, 1983, Ser. No. 489,761
Int. Cl.^{3} E21B *43/04*
U.S. Cl. 166—278 12 Claims

8. In an improved method for gravel packing a perforate liner in the production zone of wells having at least some high-angled portions of well bore through which the drill pipe passes for lowering the perforate liner into the production zone and in which the gravel-ladened fluid is pumped down the drill pipe and out through the crossover tool into the annulus around the outside of the liner, the improved method comprising, slowly rotating the drill pipe without rotating the liner throughout substantially the entire duration of said pumping the gravel-laden fluid through the crossover tool.

4,469,179

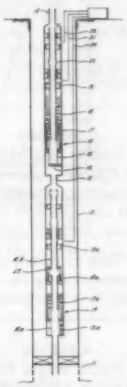
SAFETY SYSTEM

Robert W. Crow, Irving; Michael B. Vinzant, Carrollton, and Kenneth L. Schwendemann, Lewisville, all of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 17, 1981, Ser. No. 331,641

Int. Cl.³ E21B *34/10*

U.S. Cl. 166—319 **3 Claims**



1. A surface controlled subsurface safety valve comprising,

a tubular body,

a valve member controlling flow through the body,

a valve operator for moving said valve member between open and closed positions,

a pressure responsive member carried by said operator for moving said operator to open position when subjected to a selected fluid pressure, and

means releasably securing said valve operator in position maintaining said valve member in non-closed position,

said securing means releasing said operator in response to movement of said pressure responsive member toward valve opening position to place said valve in service.

4,469,180

WELL FLUID PRESSURE BALANCED OPERATOR FOR SUBSURFACE SAFETY VALVE

Edwin C. Turner, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Oct. 21, 1981, Ser. No. 313,380

Int. Cl.³ E21B *43/12*

U.S. Cl. 166—324 **5 Claims**

1. A safety valve apparatus adapted for use at a subsurface location in a hydrocarbon producing well, including:

a tubular housing having a flow passage extending longitudinally therethrough;

a flow closure element mounted with said tubular housing for movement to and from an open position for enabling flow through said flow passage and a closed position for blocking flow through said flow passage;

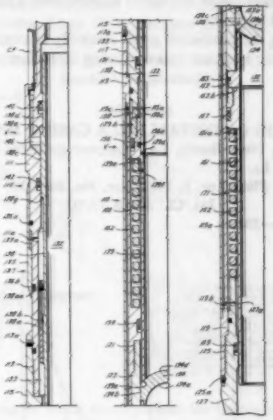
operator means operably connected with said flow closure element for moving said flow closure element to and from the open and closed positions, said operator means forming an expansible chamber with a pressure responsive surface for moving said flow closure element to the open position in response to a controlled fluid pressure in said expansible chamber;

means for urging said operator means to move said flow closure element to the closed position;

means for substantially balancing the urging of well fluid pressure on said operator means to eliminate the effect of well fluid pressure on said operator means when operating said flow closure element;

said operator means includes a first tubular assembly movably disposed in said flow passage above said flow closure element, said first tubular assembly forming said expansible chamber and leaving said pressure responsive surface exposed to the controlled fluid pressure for moving said flow closure element to the open position;

said first tubular assembly forming an upwardly facing annular surface responsive to well fluid pressure;



said first tubular assembly sealing with said flow closure element in the closed position to block passage of well fluid therebetween; and

means for communicating well fluid pressure to said upwardly facing annular surface responsive to well fluid pressure when said flow closure element is in the closed position.

4,469,181

ADJUSTABLE CONDUCTOR GUIDE ASSEMBLY FOR SUB-SEA WELLS AND METHODS AND TOOLS FOR ADJUSTMENT THEREOF

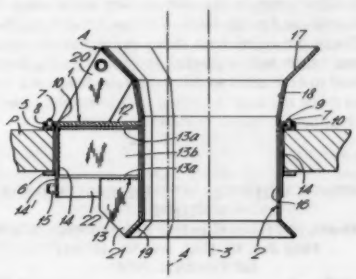
Rodney Kellett, Leeds, England, assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Feb. 23, 1983, Ser. No. 469,086

Claims priority, application United Kingdom, Feb. 24, 1982, 8205409

Int. Cl.³ E21B *43/01*

U.S. Cl. 166—341 **11 Claims**



1. A method of aligning with a sub-sea well head a conductor guide mounted in a platform above the well head, the conductor guide being the inner guide of an assembly comprising an outer ring supported in an aperture in the platform and

said inner guide supported eccentrically thereon and releasably restrained against rotation with respect to said outer ring, the method comprising the steps of:

(a) lowering through the guide an adjusting tool having a projection to extend substantially to the well head;

(b) by means of the adjusting tool, releasing and rotating the conductor guide assembly in its aperture to bring the axis of the inner guide as near as possible into alignment with the well head; and

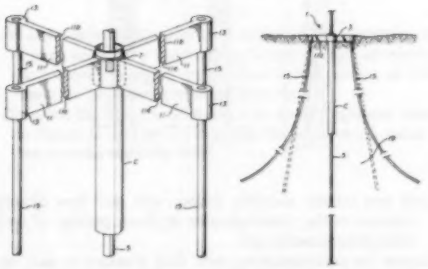
(c) locking the conductor guide assembly in angular position within the aperture and removing the adjusting tool.

4,469,182

METHOD OF INSTALLING A CASING HANGER

James Hipp, New Iberia, La., assignor to Petro-Drive, Inc., Lafayette, La.

Filed Apr. 1, 1982, Ser. No. 364,526
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—382 **5 Claims**



5. The method of installing a casing-liner and supporting it in a hole that has been excavated from the earth so as to maintain the physical integrity of the hole itself, comprising the steps of:

(a) disposing a casing hanger apparatus means having an opening therethrough above the hole and with the opening in alignment therewith, and characterized by openings for receiving a pile means;

(b) installing pile means through said casing hanger apparatus means and into the earth in an outwardly direction away from the hole for pinning the casing hanger apparatus means in a position and so as to define a pyramidal mass of earth which assists in supporting the casing-liner to be hung within the hole from the casing hanger apparatus means.

(c) inserting sequential length of casing joint into the hole and affixing each to the other as they are lowered thereinto until the desired depth of lining therefor is achieved;

(d) affixing the casing liner to the casing hanger apparatus means while said sequential lengths of casing-liner are affixed to each other so that the former hangs in a tension state while the load therefrom is distributed by the latter throughout the length of the entire casing.

4,469,183

AUTOMATIC CHIMNEY FIRE EXTINGUISHER AND METHOD

Robert Hayes, 19A Forest Glen Rd., Valley Cottage, N.Y. 10989

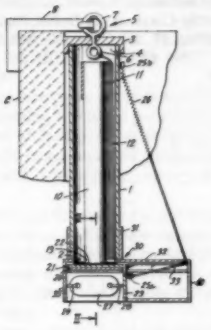
Filed Jan. 10, 1983, Ser. No. 457,042
Int. Cl.³ A62C *3/04*
U.S. Cl. 169—46 **6 Claims**

1. An automatic chimney fire extinguisher, comprising:

a housing for insertion in a chimney at the outlet thereof;

a flare in the housing and means connecting the flare to the housing to suspend same therebelow at a predetermined distance;

means releasably retaining the flare in the housing and responsive to a preselected temperature level in the chimney



for releasing the flare to permit same to drop below the housing and be suspended by the connecting means; and

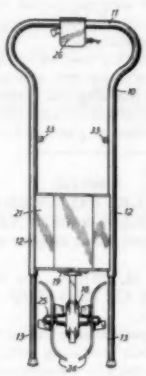
means for igniting the flare in response to the release thereof.

4,469,184

CULTIVATING TOOL WITH TELESCOPICALLY SLIDABLE ANCHOR LEGS

Victor J. Simpson, Tally-Ho, Onslow Rd., Burwood Park, Walton-on-Thames, Surrey, England

Filed May 25, 1982, Ser. No. 381,907
Int. Cl.³ A01B *1/10*
U.S. Cl. 172—41 **5 Claims**



1. A cultivating tool comprising:

a frame means having two substantially parallel elongate bores directed generally downwardly of said frame means and upwardly extending generally parallel portions extending from the upper ends of said bores and a transverse portion on the upper ends of said upwardly extending parallel portions to form a handle on the upper end which in use can be gripped by an operator;

drive means mounted on said frame means;

at least one cultivator blade means rotatably mounted on said frame means and connected to said drive means for rotation by said drive means and being of the type tending to drive the end of said frame means which is toward the ground along the ground when said cultivator blade means engages the ground;

a pair of anchor legs each slidably mounted in telescopic fashion in a respective one of said elongate bores and

projecting downwardly out of said bores and having ground engaging means at the outer end thereof for engaging the ground during operation of said cultivating tool for blocking movement of said cultivating tool along the ground during such operation;

spring means and first stop means positioned within each bore, said spring means acting between said first stop means and the respective anchor leg biasing the anchor leg in a direction out of the bore for absorbing reaction forces generated by the blade means driven by said drive means and automatically adjusting in length as said blade means penetrate the ground; and

further stop means for ensuring that the anchor legs are not pushed out of their respective bores by the spring means.

4,469,185

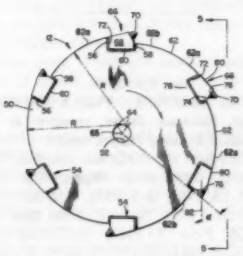
CUTTER WHEEL FOR TILLAGE APPARATUS

Robert E. Fox, Minburn, and Wendell D. Reece, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.

Continuation of Ser. No. 970,538, Dec. 18, 1978, abandoned. This application Apr. 23, 1981, Ser. No. 256,643

Int. Cl.³ A01B *33/10*

U.S. Cl. 172—540 **9 Claims**



1. In a tillage apparatus, a cutter wheel adapted for rotation in a forward direction for cutting a trench in soil, the cutter wheel comprising:

a disk member having a periphery with a plurality of insert-receiving slots spaced thereabout, each defined by a trailing edge portion facing generally in the direction of rotation, a bottom portion facing generally radially outwardly, and a forward edge portion facing rearwardly opposite the trailing edge portion, and wherein the trailing edge portion extends radially outwardly of the forward edge portion;

a plurality of smoothly contoured sections located between the slots, each section tapering slightly radially inwardly from the trailing edge of one slot to the leading edge of the adjacent slot to define a shallow gullet area adjacent the leading edge;

a plurality of insert members, each including a first portion conforming generally to the shape of one of the slots and secured to the bottom and trailing edge portions of the slot for support by the disk, and a forwardly facing tip-receiving portion located in the gullet area and extending radially beyond the periphery at the forward edge portion; and

a tip member connected to the tip-receiving portion and having a hardened cutting surface disposed generally in the direction of rotation so that the tip member is loaded primarily in compression against the insert member as the cutter wheel cuts a trench, each insert member also including a top portion extending forwardly from, and generally tangentially to, the rearwardly adjacent contoured section and forming a substantially continuous peripheral portion with said section and with the radially outermost portion of the tip member so that as the cutter wheel wears radially inwardly, the tip member and the top portion of the insert member wear at approximately the same rate to maintain continuity of the peripheral portion, and wherein a substantial portion of said tip member is located radially inwardly of the top portion of said insert member.

4,469,186

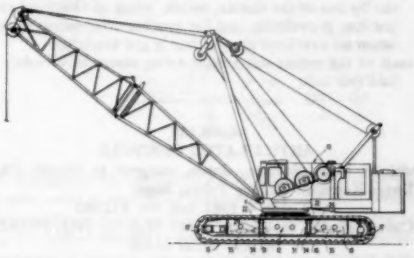
CRAWLER TO BASE FRAME CONNECTION

Paul C. Goodwine, Lima, Ohio, assignor to Kidde, Inc., Clifton, N.J.

Filed May 24, 1982, Ser. No. 381,229

Int. Cl.³ B62D *55/10*

U.S. Cl. 180—9.1 **5 Claims**



1. In a crawler truck arrangement for heavy equipment, a base frame having opposite long sides and opposite short ends for the selective attachment of crawler assemblies thereto, spaced mounting members fixed to said opposite long sides and short ends of the base frame and having upper pin seating recesses and lower locking pin openings, coacting interfitting mounting members fixed to interior sides of the crawler assemblies and having upper permanent mounting pins adapted to enter said seating recesses and being supported therein and also having lower locking pin openings movable into registration with the first-named locking pin openings, a guide sleeve member on one side of the mounting member of the crawler assembly coaxially aligned with each lower locking pin opening of such member, lower mounting and locking pins disposed at the interior sides of said crawler assemblies parallel to the longitudinal axes thereof and being insertable through the guide sleeves and locking pin openings of the mounting members when such openings are in registration, and a pivoted safety latch element on said sleeve including a projecting nose engageable behind the rear end of the lower locking pin to block premature withdrawal of such pins and means to releasably lock the latch element in its active latching position relative to the lower locking pin, and power means on said crawler assemblies to operate said lower mounting and locking pins, whereby each crawler assembly and associated mounting members, mounting pins, locking pins and power means may be attached as a unit to a selected long side or short end of the base frame.

4,469,187

ARTICULATED BUS

Faust Hagin, and Hans J. Drewitz, both of Munich, Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Munich, Fed. Rep. of Germany

Filed Aug. 13, 1982, Ser. No. 407,865

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134245

Int. Cl.³ B60K *1/00*

U.S. Cl. 180—14.2 **3 Claims**

1. An articulated bus comprising:

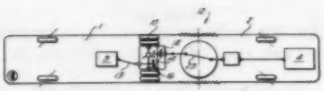
a leading car and a trailing car pivotally connected to each other, the leading car having a front axle and a rear axle and the trailing car having only one axle,

an electric motor carried by the leading car in a position in

front of the rear axle thereof, with reference to the direction of travel of the bus,

means for furnishing electric power to the motor from an overhead electric line,

an internal combustion engine carried by the trailing car, and



means for alternatively driving the rear axle of the leading car by one of the electric motor, when an overhead electric line is available, and the internal combustion engine, when an overhead electric line is not available,

each of the motor and engine being connectable solely to said rear axle.

4,469,188

ARTICULATED TRICYCLE

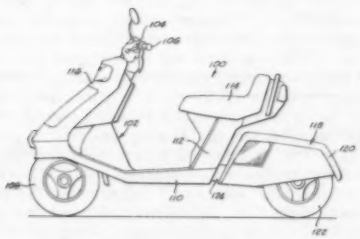
Yoshinori Mita, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,083

Claims priority, application Japan, Mar. 19, 1982, 57/44212

Int. Cl.³ B62D *61/08*

U.S. Cl. 180—215 **14 Claims**



1. A tricycle comprising

a front body;

a rear body, said front body and said rear body being pivotally coupled about a transverse axis of the tricycle therebetween, said rear body including a first body member pivotally mounted about said transverse axis and a second body member pivotally mounted to said first body member about a longitudinal axis of the tricycle;

an engine mounted to said front body; and

a power train mounted to said rear body, said engine and said power train being coupled at said transverse axis.

4,469,189

MOTORCYCLE WITH TURBO-CHARGER

Shunji Minami, Fukuroi, and Hiroshi Kimura, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

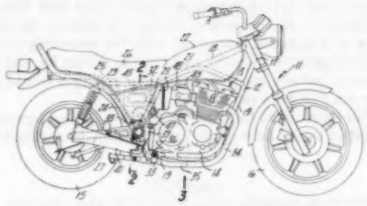
Filed Sep. 15, 1981, Ser. No. 302,657

Claims priority, application Japan, Sep. 16, 1980, 55-128146

Int. Cl.³ F02D *23/00*; B60K *13/00*; B62K *11/04*

U.S. Cl. 180—219 **3 Claims**

1. In a motorcycle having a frame assembly, a a pair of wheels suspended from said frame assembly, the rear wheel being suspended from the frame assembly by a pair of trailing arms interconnected by a cross tube extending transversely across said frame assembly and pivotally supported thereupon, an internal combustion engine having a plurality of exhaust pipes extending in a transverse row from the forwardmost position of said engine, and an induction system for said engine including turbo-charger means for delivering a boost to the intake charge, the improvement comprising said turbo-charger means being positioned between said engine and the rear of said wheels and adjacent to said cross tube, said exhaust pipes



extending downwardly and merging in a collector section positioned beneath said engine and a discharge section extending from said collector section to the turbine stage of said turbo-charger.

4,469,190

FUEL TANK ASSEMBLY FOR A MOTORCYCLE

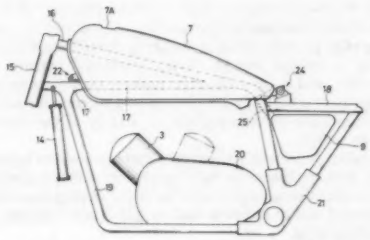
Ken Yamaguchi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,962

Claims priority, application Japan, Sep. 19, 1981, 56-139158[U]; Oct. 28, 1981, 56-171325; Oct. 28, 1981, 56-171327; Oct. 28, 1981, 56-171328; Nov. 7, 1981, 56-177834; Nov. 7, 1981, 56-177835; Nov. 7, 1981, 56-177836; Nov. 7, 1981, 56-177837; Nov. 7, 1981, 56-177838; Nov. 7, 1981, 56-177839; Dec. 3, 1981, 56-195031; Jan. 8, 1982, 57-933[U]

Int. Cl.³ B62J *35/00*

U.S. Cl. 180—219 **20 Claims**

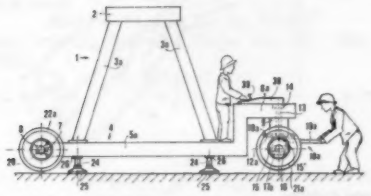


1. A fuel tank assembly for a motorcycle having a frame body, an engine disposed at a central portion of said frame body, a main fuel tank disposed above said engine, a front wheel steering member positioned in front of said main tank, a seat positioned rearwardly of said main tank, and a rear wheel, comprising; an auxiliary tank disposed below said main tank, and positioned in a space defined by said seat, said engine and said rear wheel, supporting means for pivotally supporting said main tank at its rear portion, a fuel conduit having one end connected to said main fuel tank and the other end to said auxiliary tank, said fuel conduit being positioned adjacent to said supporting means and movable in response to pivotable movement of said main tank, and a breather pipe having one end disposed in said main tank and the other end disposed in said auxiliary tank, said breather pipe movable in response to pivotable movement of said main tank.

4,469,191
CHASSIS WITH SWIVEL-MOUNTED WHEEL AXLES, ESPECIALLY FOR MOBILE CRANES

Thomas Truninger, Zurich, Switzerland, assignor to Adna Aktiengesellschaft, Vaduz, Liechtenstein

Filed Sep. 22, 1982, Ser. No. 421,512
Claims priority, application Switzerland, Oct. 21, 1981, 6720/81
Int. Cl.³ B60K *17/34*
U.S. Cl. 180—233 17 Claims



1. A self-propelled vehicle for movably supporting heavy equipment such as a gantry crane, said vehicle being movable straight ahead, straight behind or to the left or right about a fixed spot, said vehicle including:

a chassis frame upon which the heavy equipment can be mounted, said chassis frame having a front end and a rear end and defining a longitudinal dimension and a transverse dimension,

two rear wheel assemblies attached to the rear end of said chassis frame, each rear wheel assembly including at least one rotatable wheel extending beneath the chassis frame so as to contact the ground therebelow, and each rear wheel assembly including a drive means for rotating each wheel thereof,

two front wheel assemblies attached to the front end of said chassis frame, each front wheel assembly including at least one rotatable wheel extending beneath the chassis frame so as to contact the ground therebelow, each front wheel assembly including a drive means for rotating the wheel(s) thereof, each front wheel assembly being swivelable about a vertical axis and also including:

a manually operable adjusting means for causing the wheel assembly to swivel and change the angular orientation of the wheel(s) thereof with respect to the longitudinal dimension of the chassis frame,

a locking means for fixedly positioning the swivel positioning of the wheel assembly once manually adjusted to its desired orientation,

first locking detectors to detect when the wheel assembly has been locked in a swivel positioning such that the wheel(s) thereof are directed in parallel with the longitudinal dimension of the chassis frame to result in straight ahead or straight behind movement of the vehicle, and

second locking detectors to detect when the wheel assembly has been locked in a swivel positioning such that the wheel(s) thereof are directed at an angle to the longitudinal dimension of the chassis frame to result in left or right movement of the vehicle about a fixed spot,

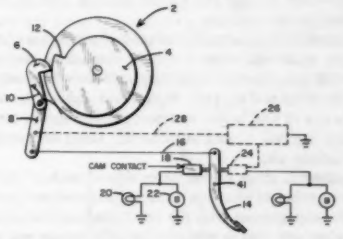
four adjustable support means attached to said chassis frame, each adjustable support means being located near a respective wheel assembly, each adjustable support means including an extendable support leg with foot plate which is extendable beneath the chassis frame to lift the wheel(s) of the adjacent wheel assembly off the ground and an elevating mechanism for adjusting the degree of extension of the support leg, and

first and second electrical control circuits respectively connected to said first and second locking detectors, to control the operation of said drive means of said wheel assemblies.

4,469,192
KEY INTERLOCKED PARKING BRAKE SAFETY ASSEMBLY

DuWayne Schimek, 8856 - 134th St. West, Apple Valley, Minn. 55124

Filed Aug. 8, 1983, Ser. No. 520,990
Int. Cl.³ B60R *25/04*
U.S. Cl. 180—287 7 Claims



1. Apparatus for interlocking a keyed automotive ignition assembly with an associated parking brake assembly, wherein said ignition assembly includes a keyed tumbler coupled to a bidirectionally movable member and said movable member cooperatively engages one or more electrical contacts during the rotation of said key and wherein said key is inserted in and released from said ignition assembly at a key release position, comprising:

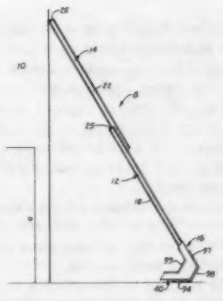
(a) means for restraining the movement of said movable member once said movable member has traversed a predetermined point in a first direction of travel, such that upon being engaged in its opposite direction of travel, said movable member cannot be returned to said key release position; and

(b) means coupling said restraining means to said parking brake for releasing said restraining means and permitting said movable member to return to said key release position, upon engaging said parking brake, and thereby release said key from said ignition assembly.

4,469,193
UTILITY LADDER

Joseph F. Rumsey, Jr., 1140 NW. 63rd St., Oklahoma City, Okla. 73116

Filed Mar. 28, 1983, Ser. No. 479,153
Int. Cl.³ E06C *1/36, 1/38*
U.S. Cl. 182—22 5 Claims



1. The utility ladder comprising:

a pair of slidingly engaged ladder sections each including:

a pair of spaced, parallel rails; and

a plurality of spaced, parallel, transverse rungs engaging the parallel rails; and

an interconnecting pedestal subassembly which comprises:

a first pair of spaced, parallel hollow legs adapted to slidingly engage the spaced parallel rails of either of said ladder sections;

a second pair of spaced, parallel hollows legs convergent with respect to said pair of parallel legs and adapted to slidingly engage the spaced parallel rails of either of said ladder sections;

rigid ribs on the outer side of each of the legs in one of said leg pairs and adapted and positioned for engagement with a horizontal supporting surface when said legs in the other said leg pairs engage and support the side rails in one of said ladder sections, and the legs in the in said one leg pair extend horizontally along said supporting surface; and

elastomeric strips on the outer side of each of the legs in said other of said legs pairs and adapted and positioned for engagement with the horizontal supporting surface when said legs in said one leg pair engage and support the side rails of one of said ladder sections, and the legs in the other of said pair of legs extend horizontally along said supporting surface; and

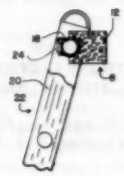
a step plate extending across and interconnecting the convergent ends of the first and second pairs of parallel legs.

4,469,194

NON-SLIP RESILIENT LADDER SUPPORT

Thomas D. McBride, 559 Chestnut St., Westwood P.O., N.J. 07675

Filed Oct. 21, 1983, Ser. No. 544,018
Int. Cl.³ E06C *7/48*
U.S. Cl. 182—107 **7 Claims**



1. A non-slip resilient ladder support for ladders of rung and stile construction and characterized as having at least one of the top rungs adapted to retain such a support, the ladder also of a type adapted for leaning against a wall, corner, tree, pole and the like, said non-slip resilient support including:

(a) a shell-like member providing an internal configuration sized and adapted for slidable mounting on a rung of a ladder to which it is to be mounted and less than the length between stiles;

(b) a resilient non-skid member having a length less than the length of the shell-like member and secured to said shell-like member so as to provide extending portions at each end of the shell-like member, and

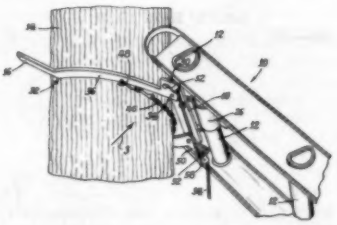
(c) clamp means adapted to engage each extending end of the shell-like member and when secured and/or tightened retain the ladder support so as to not move during use and with the resilient portion extending at a desired attitude and with at least a portion of the resilient portion extending at least one inch beyond the stile.

4,469,195

LADDER SAFETY ATTACHMENT

Don M. Sartain, P.O. Box 314, Wabasso, Fla. 32970

Filed Apr. 29, 1983, Ser. No. 490,130
Int. Cl.³ E06C *7/48*
U.S. Cl. 182—206 **5 Claims**



1. A ladder safety attachment comprising,

a base member,

means on the base member operable for detachably securing the attachment to the ladder,

a pair of horns pivoted on the base member at widely spaced points on the latter and swingable thereon toward each other for gripping an object therebetween against which the ladder is placed and away from each other for releasing them from the object, the horns being swingable independently of any connection with the ladder,

a spring yieldingly biasing the horns toward each other,

a chain interconnecting the horns adjacent the base member, the chain being transversely flexible but non-yieldable linearly outwardly, the chain engaging the object when the horns are in gripping position, and

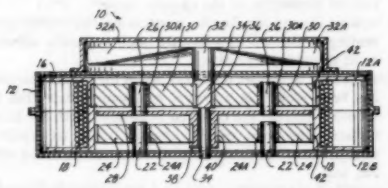
means actuatable by a user on the ground operable for moving the horns away from each other.

4,469,196

FIRE ESCAPE DEVICE

Charlton Sadler, P.O. Box 446, Brooksville, Fla. 33512

Filed Sep. 30, 1982, Ser. No. 430,962
Int. Cl.³ A62B *35/00, 1/10*
U.S. Cl. 182—236 **2 Claims**



1. A fire escape device, comprising in combination:

a drum;

a length of cable wound on said drum;

a fan assembly; and

a first and a second set of planetary gears operatively connected between said drum and said fan assembly to cause the blades of said fan assembly to rotate at great speed upon rotation of said drum, said first set of planetary gears comprising a plurality of first stub shafts rigidly connected to said housing and a corresponding plurality of first spur gears rotatably journaled on said first stub shafts for geared engagement with said drum and said second set of planetary gears comprising an intermediate plate for geared engagement with said first spur gears, a plurality of second stub shafts rigidly affixed to said intermediate

plate, and a corresponding plurality of second spur gears rotatably journaled on said second stub shafts for geared engagement with said drum and said fan assembly,

whereby upon rotation of said drum during the unwinding of said cable therefrom, said first and second sets of planetary gears operatively causes the blade of said fan assembly to rotate at great speed.

4,469,197

DRIVE MECHANISM FOR TOY RUNNING VEHICLES

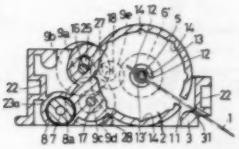
Ishida Minoru, 8-302, No. 8, Ikenohata 4-Chome, Taito-ku, Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,782

Claims priority, application Japan, Sep. 30, 1981, 56-145497[U]

Int. Cl.³ F03G *1/00*

U.S. Cl. 185—45 **3 Claims**



1. A drive mechanism for toy running vehicles comprising, a first frame member, a circular spring receiving recess in said first frame member, a plurality of circumferentially spaced small indented recesses on the inner peripheral wall of said recess, a coil spring in said recess having a curved portion on its outer end releasably and resiliently engaged in one of said small recesses, a guide slot in said first frame communicating with said recess for inserting said spring therethrough into said recess, a second frame member, snap elements on said second frame and cooperating snap engaging means on said first frame for retaining said frame members together, a driven shaft rotatably mounted at its ends in said frame members, a driven gear fixedly mounted on said driven shaft within said frame members, drive shaft holes in said frame members substantially coaxially aligned with said coil spring, a drive shaft rotatably mounted at its ends in said drive shaft holes, one of said ends being pointed, a drive gear member fixedly mounted on said drive shaft, a pair of opposing projections extending from said drive gear member into said recess on opposite sides of said drive shaft to form a slot therebetween, the inner end of said coil spring being inserted through said slot, and a gear mechanism operatively mounted within said frame members in engagement with said drive shaft and driven shaft so that said driven shaft may be driven by said coil spring when said spring has been wound into its driving condition.

4,469,198

OUTSIDE RESCUE ELEVATOR SYSTEM FOR HIGH-RISE BUILDINGS

Robert F. Crump, 1503 Thackeray Dr., Louisville, Ky. 40205

Filed Apr. 16, 1982, Ser. No. 369,315

Int. Cl.³ B66B *9/00*

U.S. Cl. 187—8 **11 Claims**

1. An outside rescue elevator system for a high-rise building, said system comprising:

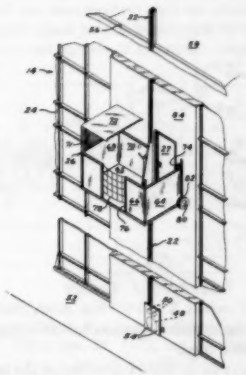
a. a hollow, dual compartment track of double box-beam configuration in transverse view with two separate compartments, said track being adapted to be mounted vertically relative to an exterior wall of a building;

b. an elongated wheeled truck permanently positioned to travel within only one box-beam compartment of the track and having roller contact with the interior walls of said one track compartment;

c. said one compartment of the track having a narrow elongated slot in an outer wall extending longitudinally thereof;

d. the truck having coupling means extending outwardly through said slot for making engagement with a removably-attached portable elevator cab;

e. and an endless cable hoist system associated with the said dual track and including cable means in combination with sheaves mounted at both the top and bottom ends of the track, one pass of the cable means extending completely through the second box-beam compartment of the dual track and being shielded from the moving wheeled truck, while a second pass of the cable means is located within the first compartment and has free ends of the cable that are joined one to the top end of the truck and the other to



the bottom end of the truck for supporting and moving the truck and its elevator cab;

f. said portable elevator cab having coupling means for joining with the coupling means of the truck, where said coupling means between the truck and the elevator cab comprises a pair of vertically spaced couplers, one adjacent the top of the cab and the other adjacent the bottom of the cab, so as to prevent the cab from wandering from its course of travel, and at least two rubber-tired stabilizing wheels carried by the lower portion of the elevator cab that are adapted to roll on smooth exterior walls of the building for gaining balance and stability of the cab during high speed movement as the elevator cab traverses the exterior of the building.

4,469,199

ELEVATOR SYSTEM

Marjorie J. Polis, Morristown; Linus R. Diraberger, Randolph, and Matthew F. Kersen, Union, all of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1982, Ser. No. 387,302

Int. Cl.³ B66B *3/02*

U.S. Cl. 187—29 **2 Claims**

1. An elevator system, comprising:

a structure having a plurality of floors and a hatchway,

an elevator car mounted for movement in said hatchway,

motive means for moving said elevator car relative to the structure, to serve said floors,

call registering means for registering calls for elevator service,

travel direction means for establishing a car travel direction in response to a call for elevator service,

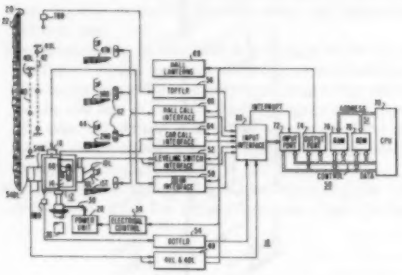
target floor means for determining the floor at which the elevator car is to stop,

advanced car position means for maintaining the advanced car position of the elevator car, said advanced car position only being the same as the actual car position when the car

is stationary and when the car is in the process of stopping at a target floor, otherwise being one floor ahead of the actual car position, to always signify the floor at which the car can make a normal stop,

first and second vertical lanes of indicia mounted in said hatchway, with each lane having a single indicium associated with each floor, said first and second lanes providing the dual functions of: (a) indicating elevator car slowdown points for the floors in the up and down travel directions, respectively, when the associated floor is a target floor, and (b) indicating that the advanced car position means should change the advanced car position, when the associated floor is not a target floor,

a single detector on said elevator car for each of said first



and second lanes, with each detector detecting the indicia in its associated lane,

means responsive to car travel direction at the start of a run for changing the advanced car position means to the next adjacent floor in the car travel direction,

said advanced car position means being responsive to said detector means and to said target floor means when the car is moving, changing the advanced car position in response to the detection of each indicium in the lane associated with car travel direction not associated with the target floor,

and means responsive to said detector means and said target floor means for initiating slowdown of the elevator car when said detector means detects the indicium associated with the target floor.

4,469,200

RELEASABLE HOISTWAY DOOR SAFETY INTERLOCK

Robert W. Young, Avon, and Harry J. Friedenreich, Southington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 125,737, Feb. 28, 1980, abandoned. This application Oct. 29, 1981, Ser. No. 316,364

Int. Cl.³ B66B *13/00*

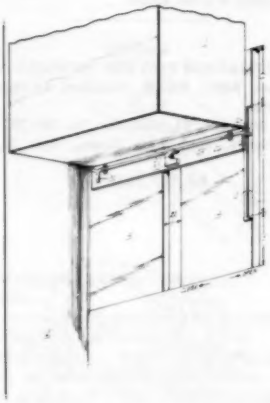
U.S. Cl. 187—61 **9 Claims**

1. An elevator system comprising a car with a car door and, on each floor, a hoistway door, characterized by a hoistway door interlock apparatus that limits the extent to which the hoistway door opens when the car is at a position more than a certain first distance above the floor level, and that the hoistway door interlock may be operated from the floor to permit the hoistway door to open completely without operating the car door or moving the car from said position;

a first member that is attached to the car and that is stationary thereon relative to the direction in which the hoistway door opens and closes and that is also stationary relative to the motion of the car door; and

a second member that is attached to the hoistway door and that engages said first member as the hoistway door opens, the engagement between the two acting to restrict further opening of the hoistway door which is connected through the engagement to the car;

the second member extending in the direction the car moves for a second distance from said position, and occupying space between the hoistway door and the car; and



the first member being a third distance from the second member as measured in the direction the hoistway door opens, and operable from the floor to be moved out of the path of the second member.

4,469,201

CLAMPING DEVICE

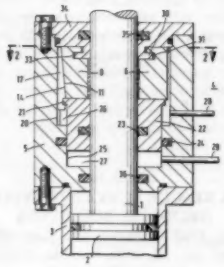
Adolf Rastetter, and Erich Schmalenbach, both of Karlsruhe, Fed. Rep. of Germany, assignors to Sitema, Gesellschaft für Sicherheitstechnik und Maschinenbau mbH, Karlsruhe, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,716

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144359

Int. Cl.³ B65H *59/10*

U.S. Cl. 188—67 **8 Claims**



1. A clamping device comprising:

a housing;

a bar mounted for guided movement in said housing;

a plurality of jaws disposed about said bar and mounted in said housing so as to be capable only of radial movement inward into gripping engagement with said bar and outward out of said gripping engagement and to be prevented from axial movement relative to said housing and said bar;

a cylinder formed in said housing and having an axis extending in a direction lengthwise of said bar;

a piston slidably mounted in said cylinder;

passage means for applying pressure fluid into said cylinder at at least one side of said piston; and

wedge elements disposed radially between said jaws and said housing and connected to said piston for movement therewith in each direction of movement thereof, said wedge elements having planar guide faces with respect to said housing and said jaws.

4,469,202

BRAKE CONTROL MECHANISMS FOR USE WITH TRAILERS

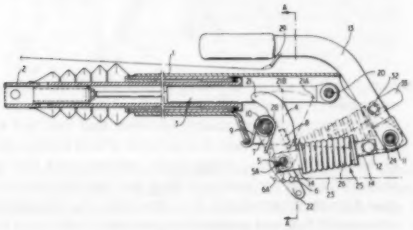
Harry S. Bradley, Bradford, England, assignor to H & K Bradley (Trailer Equipment) Limited, Bingley, England

Filed Mar. 26, 1982, Ser. No. 362,207

Claims priority, application United Kingdom, Nov. 24, 1981, 8135370

Int. Cl.³ B60T *7/20*; F16H *53/06*

U.S. Cl. 188—112 R **17 Claims**



1. A brake control mechanism for use with trailers, the mechanism comprising:

a first member having a connection point for a brake cable or the like and being arranged to co-operate with a push rod of a towing coupling to undergo first pivoting movement about a first pivot point, to actuate brakes in an overrun manner; and

a handbrake mechanism arranged to cause the first member to undergo second pivoting movement about a second pivot point, such that the maximum travel of said connection point in said second movement is greater than that in said first movement, the handbrake mechanism including means for biasing said first member into a brake-actuating position.

4,469,203

ROTATABLE BRAKE MEMBER PROVIDED WITH VENTILATION CHANNELS

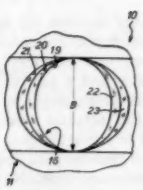
Jean Herbulot, Franconville, and Bernard Jumel, Pierrefitte, both of France, assignors to Valeo, Paris, France

Filed Jan. 19, 1982, Ser. No. 340,692

Claims priority, application France, Jan. 27, 1981, 81 01453

Int. Cl.³ F16D *65/12*, *65/847*

U.S. Cl. 188—218 XL **4 Claims**



1. A rotatable brake member comprising a disc having a plurality of substantially radial ventilation channels, at least one of which is divided longitudinally into at least two portions which are generally coaxial with a mean longitudinal line of the channel which is a radius of said disc, said portions having substantially constant cross-sections, said portions having an abrupt discontinuity of cross-section relative to one another, the or each channel defining a single, empty radial passage, the side wall of the or each of said portions being smooth and continuous and parallel to and symmetrical about said axis, said abrupt discontinuity of cross-section between the portions being provided by a peripheral transverse annular step, said at least one channel having three portions separated respectively by two steps and comprising an intermediate portion of circular cross-section and two end portions of elliptical cross-section, the radially inner end portion of elliptical cross-section having a major axis of the ellipse equal to the diameter of the intermediate part of circular cross-section which is itself equal to the minor axis of the ellipse of the radially outer end portion of elliptical cross-section.

4,469,204

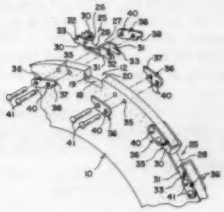
BRAKE APPARATUS

Lowell D. Bok, Anna, and Bradley J. Baden, Troy, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,818

Int. Cl.³ F16D *65/10*

U.S. Cl. 188—218 XL **6 Claims**



4. In a friction brake disc having a pair of annular flat wall surfaces, an inner peripheral wall surface, and an outer peripheral wall surface; said disc having a plurality of circumferentially spaced slots along one of said periphery wall surfaces for engagement by a spline of a torque device; each of said slots having two generally radially extending wall portions and a bottom surface extending between and interconnecting said wall portions; an insert located within each of said slots for reinforcing said slots; each of said inserts having a general U-shaped configuration with two spaced legs and an interconnecting bridging section; each of said legs having an intermediate portion and two side portions; said intermediate portion adapted to abuttingly contact one of said two radially extending wall portions; said side portions being parallel to each other and adapted to abuttingly engage a portion of said annular flat wall surfaces; each of said side portions being recessed on their terminal ends adjacent said one peripheral wall surfaces; a plurality of circumferentially spaced clips along said one peripheral wall surface securely fastened to said disc; and each of said clips having at least one end projecting into an adjacent recess on one of said side portions of said legs to retain said inserts.

4,469,205

BRAKE SHOE ASSEMBLY

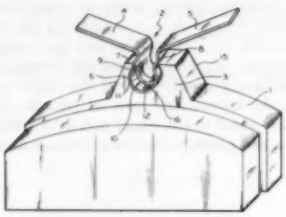
Roberto Stoka, Nauheim, and Uwe Kley, Schwalbach, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,754

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1981, 3139942

Int. Cl.³ F16D 65/04

U.S. Cl. 188—234 7 Claims



1. A brake shoe assembly comprising:

a brake shoe including a carrier member that extends along a plane, and having a peripheral surface and a recess that opens onto a region of said peripheral surface and extends along an axis transverse to said plane, said recess having a narrower width, as considered in said plane, closer to said region than more remotely therefrom;

a spring member having two end portions and an arcuate portion between said end portions, said arcuate portion being substantially conformingly received in, and said end portions being situated outwardly of, said recess in an assembled position of said spring member relative to said brake shoe;

fastening means on at least one, and positively engaging in said assembled position the other, of said spring and carrier members for retaining said spring member on said brake shoe against relative movement at least in one axial direction of said recess, wherein said spring member is a leaf spring having at least one opening; and wherein said fastening means includes at least one projection on said carrier member received in said opening in said assembled position, and wherein said opening is situated in said arcuate portion of said leaf spring; and wherein said projection is situated within said recess.

4,469,206

HYDRAULICALLY-OPERATED FRICTIONAL ENGAGEMENT DEVICE

Jiro Motomura, Anjo; Kazuaki Watanabe, Toyota, and Seiichi Nishikawa, Toyokawa, all of Japan, assignors to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Feb. 5, 1982, Ser. No. 346,211

Claims priority, application Japan, Feb. 21, 1981, 56-24740

Int. Cl.³ F16D 69/00

U.S. Cl. 192—3.28 3 Claims

1. A hydraulically-operated torque converter lock-up clutch comprising:

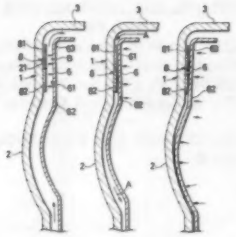
a front cover;

a thin clutch disc disposed so as to rotate about a shaft relatively to said front cover and to axially moved by the action of a fluid pressure;

a flat and annular first friction surface formed on said front cover in a plane perpendicular to the axis of said shaft;

a flat and annular second friction surface formed on said clutch disc opposite to said first friction surface and being disposed to gradually approach said first friction surface with the increase in diameter;

a friction plate disposed concentrically with respect to said shaft between said first and second friction surfaces and comprising a first portion extending over the radially outer portion of said friction plate and a second portion extending over the radially inner portion of said friction plate with respect to a circle of a predetermined radius, said first portion being made of a frictional material having a high coefficient of dynamical friction and a high heat capacity, while said second portion being made of a frictional material having a high coefficient of statical friction and a high compressive strength; and



means to apply a fluid pressure to said clutch disc so as to urge said clutch disc toward said front cover whereby at the beginning of engagement between said first and second friction surface, said first portion of said friction plate comes into frictional engagement between said first and second friction surfaces and then said second portion of said friction plate comes into frictional engagement between said first and second friction surfaces through protrusion of said clutch disc at the central part thereof by the fluid pressure applied thereto.

4,469,207

GEAR CHANGE ACTUATORS

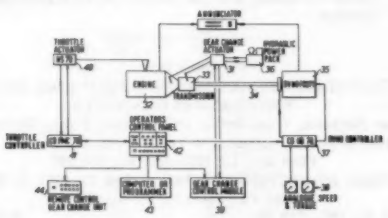
Robert J. Sandel, St. Johns, and Samuel F. Ward, Fernhill Heath, both of England, assignors to Froude Engineering Ltd., England

Filed Dec. 22, 1981, Ser. No. 333,381

Claims priority, application United Kingdom, Dec. 29, 1980, 8041366

Int. Cl.³ B60K 41/22

U.S. Cl. 192—3.58 5 Claims



1. A gear box change actuator for actuating selection of gears by a gear box, said gear change actuator comprising first actuator means for moving a gear lever of the gear box between a neutral position and a gear selection position, and clamping means for selectively engaging and disengaging the gear lever with said first actuator means, said first actuator means being arranged to move the gear lever selectively between a central neutral position with respect to the gear box and gear selecting positions on respective opposite sides of said central neutral position, a fixed support, a slidably mounted carriage and second actuator means for moving the gear lever transversely to the direction of movement provided by said first actuator means, said second actuator means comprising a

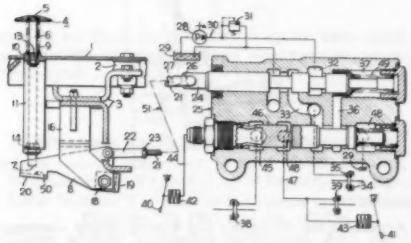
fluid-operated piston and cylinder, said cylinder being mounted on said fixed support and said piston being connected to said slidably mounted carriage, said slidably mounted carriage carrying said first actuator means.

4,469,208

CONTROL FOR DIFFERENTIAL LOCK

Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 18, 1981, Ser. No. 332,232
Int. Cl.³ B60K *41/26*
U.S. Cl. 192—4 A **10 Claims**



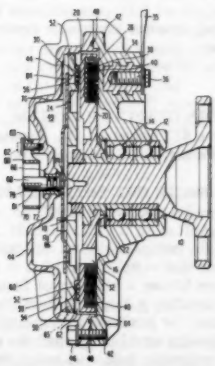
1. A control for a differential lock comprising, a vehicle platform resiliently mounted on a vehicle chassis, a foot operated control element mounted on said platform normally biased to a return position, an actuating mechanism mounted on said vehicle chassis including an engaging surface for momentary engagement with said control element when said control element is actuated, an actuating surface on said control element for selectively operating against said engaging surface and normally retracted in spaced relation from said engaging surface, a control valve operatively connected to said mechanism and to said differential lock, said control valve including detent means for selectively retaining said valve in a differential lock position, means biasing said control valve and said mechanism to a retracted and differential released position when said detent means is released.

4,469,209

VISCOUS FLUID COUPLING DEVICE

Masaharu Hayashi, and Ryoichi Kuga, both of Aichi, Japan, assignors to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Jul. 30, 1981, Ser. No. 288,449
Claims priority, application Japan, Jul. 30, 1980, 55-104805
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **1 Claim**



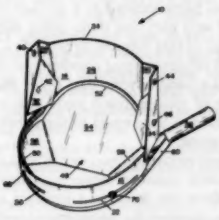
1. A viscous fluid coupling device comprising input means including a drive shaft having a rotor secured thereon, output means including a housing enclosing said rotor and containing a viscous fluid for transferring torque from said input means to said output means, said housing including a separator disc secured within said housing to define a reservoir chamber and a working chamber in which said rotor is located, interfitting relatively rotatable means on said rotor, said housing and said disc for transferring torque from said rotor to said housing when said viscous fluid is disposed between said interfitting means, an aperture in said rotor for transferring said fluid from one side of said rotor to the other, said separator disc having aperture means adjacent the periphery thereof through which said viscous fluid flows from said working chamber to said reservoir chamber, a first opening means through which said viscous fluid flows from said reservoir chamber to said working chamber at said interfitting means on said disc and said rotor and second opening means disposed radially inwardly of said first opening means and angularly offset therefrom said second opening means being at the same radial distance from the axis of said shaft as the aperture in said rotor, bimetal means for detecting the temperature of air passing through a radiator and a valve strip secured to said bimetal and disposed in engagement with said disc to control the opening and closing of said first and second opening means at different temperatures; said valve strip being comprised of a long arm portion for covering said first opening means and a short arm portion for covering said second opening means with said arm portions extending diametrically opposite directions with said second opening means being angularly offset from said first opening means by an angle of approximately 170° so that upon rotation of said valve strip upon an increase in temperature said first opening means will be uncovered prior to said second opening means whereby opening of said first opening means will supply fluid from said reservoir chamber to a first portion of said working chamber between said separator disc and said rotor and opening of said second opening means will supply fluid from said reservoir chamber through said aperture in said rotor to a second portion of said working chamber between said housing and said rotor.

4,469,210

ROTARY CHUTE FOR SPREADER

John E. Blumer, Beatrice, and Arthur F. Linsenmeyer, Wymore, both of Nebr., assignors to Dempster Industries Inc., Beatrice, Nebr.

Filed Aug. 30, 1982, Ser. No. 412,981
Int. Cl.³ B65G *11/00*
U.S. Cl. 193—22 **8 Claims**



1. Rotary chute for use with a spreader having a spinner, the spinner including a conical disc and plurality of spaced spinner blades, said rotary chute comprising:

a. outer ring means including supporting means affixed thereto for supporting said outer ring means on an end of said spreader, a plurality of elongated rotational support holes spaced about a circumference of said outer ring means, and at least one indicating means on said outer ring means; and,

b. inner ring means including a circumferential ring member

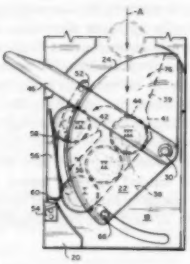
of a larger height than said outer ring means but a lesser diameter than said outer ring means, a like plurality of square-shank holes corresponding to said elongated rotational support means for supporting with nut-and-bolt assemblies said inner ring means within said outer ring means, and at least one baffle means secured to said inner ring means and positioned about an axis of said conical spinner of said spinner disc, handle means positioned on a lower portion of said inner ring menas for adjusting rotationally said inner ring means with respect to said outer ring means, and indicator means including plurality of circumferential marks for indicating angular distribution whereby pattern distribution of dry material spread by said spinner of said spinner through interaction by material directed by said rotary chute thereby provides for predetermined and equalized pattern distribution of dry material from said rotary chute.

4,469,211

COIN MECHANISM FOR VENDING MACHINE

Robert V. Shipman, Sr., Pasadena, Calif., assignor to Shipman Manufacturing Co., Inc., Los Angeles, Calif.

Filed Jul. 19, 1982, Ser. No. 399,461
Int. Cl.³ G07F 5/04
U.S. Cl. 194—1 G **10 Claims**



1. In a coin mechanism for a vending machine requiring a predetermined number of specific coins before a product will be dispensed comprising:

spaced-apart housing walls having a defined coin path therebetween;

a coin member mounted for rotation about a center axis upon one of said walls providing a coin accumulation area in coin receiving relation below said path, said area including partition parts secured to a surface thereof;

a first one of said partition parts being disposed proximate the free edge of said member to provide a ledge for the last coin of said predetermined number and cause a portion of said coin to extend beyond said outer edge;

a second one of said partition parts spaced from said first part a distance at least equal to the predetermined diameter of said coins;

a rotatable lever mounted upon one of said walls coextensive with said coin member center axis having push means extending from the lever to a location adjacent the free edge of the member for engagement with the portion of said coin extended beyond said free edge, said coin member and lever being rotatable between first and second positions including biasing means to maintain them at the first position until acted upon, the free edge of said coin member formed as an arc corresponding to the path of said push means when the lever is rotated; and,

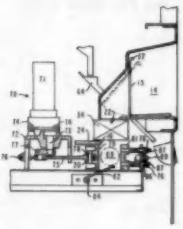
coin abutment means attached to a housing wall radially outward from the path of said push means, said abutment means cooperating with the second partition part to retain a predetermined number of coins in said accumulation area.

4,469,212

CONTAINER COLLECTION APPARATUS WITH PISTON-ACTUATED CRUSHER

Bruce H. DeWoolfson, Arlington, Va.; Stanley Flowers, W. Milton, and Robert F. Freund, Centerville, both of Ohio, assignors to Environmental Products Corporation, Arlington, Va.

Filed Apr. 20, 1982, Ser. No. 370,241
Int. Cl.³ G07F 7/06
U.S. Cl. 194—4 C **6 Claims**



1. Apparatus for collecting and storing empty aluminum containers and for issuing predetermined return deposits for collected containers comprising:

preselection means for exposing a crushed or non-crushed container offered by a customer to an electromagnetic field for identifying whether said containers are substantially aluminum without establishing direct electrical contact with said container;

said preselection means including a container access area configured to accommodate both crushed or non-crushed containers for exposure to said field;

means for accepting only a container identified by said preselection means as being substantially aluminum, independent of the configuration of said container, including a horizontal shelf for receiving a said container directly from a customer and supporting said container in said container access area during operation of said preselection means;

coin-dispensing means responsive to said preselection means for dispensing coins in return for containers having a substantially aluminum composition;

means responsive to said accepting means for crushing said accepted containers, said crushing means including an anvil and a horizontally movable piston cooperating with said anvil for crushing said container between said anvil and said piston, said shelf being fixed to said piston for allowing said container to fall by gravity into the path of said piston and said anvil when said piston is activated; and

means for storing crushed containers received from said crushing means.

4,469,213

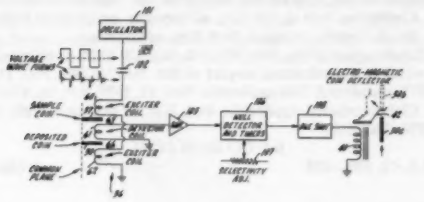
COIN DETECTOR SYSTEM

Raymond Nicholson, 817 Industrial Dr., Elmhurst, Ill. 60126, and Donald O. Parker, 509 S. Division Ave., Grand Rapids, Mich. 49503

Filed Jun. 14, 1982, Ser. No. 387,820
Int. Cl.³ G07D 5/08
U.S. Cl. 194—100 A **5 Claims**

1. A coin tester for comparing a test coin to a sample coin and accepting those that match comprising in combination a spiked signal source having a plurality of frequency components, means for creating a magnetic field from the spiked signal source, means for positioning the sample coin in the magnetic field, means for establishing a path for passing the test coin through the magnetic field, and means for sensing the magnitude and duration of the change in the magnetic field

caused by the test coin as a measure of the similarity or difference between the coins, wherein the spiked signal source comprises an oscillator for generating a square wave signal and means for differentiating the square wave signal to generate the spiked signal.



4,469,214

APPARATUS FOR MOVING SPINNING CANS

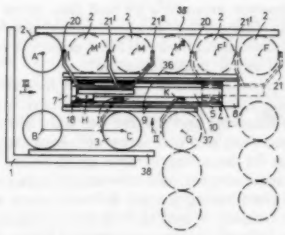
Andreas Maurer, Winterthur; Gerhard Mandl, Bruetten, and Hanspeter Meile, Winterthur, all of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Dec. 20, 1982, Ser. No. 451,536

Claims priority, application Switzerland, Dec. 22, 1981, 8219/81

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—339 **9 Claims**



1. An apparatus for moving spinning cans comprising:

a plurality of pivotably and linearly displaceable arm members for engaging and displacing cans along a drive means;

drive means for pivotably and linearly displacing said arm members;

said plurality of arm members comprising three arm members;

one of said arm members being pivotable essentially through an angle of approximately 180° for engaging and displacing cans to both side of the drive means;

both of the other arm members being pivotable essentially through an angle of approximately 90° and displacing cans at one side of the drive means; and

both of said other arm members protruding beyond said drive means in an extreme end location thereof.

4,469,215

CAN COUNTER SLIDE

Jeffrey J. Buer, 4705 Lakewood Dr., Lakewood, Iowa 50211, and Byron C. Harris, R.R. #1, Anita, Iowa 50020

Filed Feb. 4, 1982, Ser. No. 345,803

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—382 **1 Claim**

1. A counting device for counting a plurality of cylindrically shaped cans, comprising:

an elongated slide having opposite side walls and a bottom wall, said bottom wall being comprised of a plurality of elongated channels each of which includes a groove approximately V-shaped in cross-section, each of said channels having an upper end and a lower end;

support means holding said slide in an inclined position with said upper ends of said channels above said lower ends,

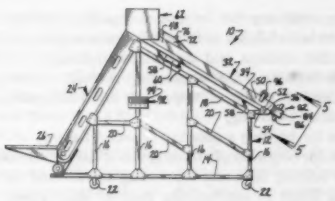
counting means adjacent said lower ends of said channels; said counting means comprising a plurality of photoelectric cells, each of which is adapted to project a beam of light in a line intersection with the longitudinal axis of one of said channels, whereby moving longitudinally along said one channel will break said beam of light,

conveyor means for carrying said cans to said upper ends of said channels and dropping said cans by gravity onto said upper ends of said channels,

said channels being sized to receive said cans in said V-shaped grooves with the cylindrical axis of said cans being parallel to said longitudinal axes of said grooves;

the inclined position of said slide channels being sufficient to cause said cans to slide downwardly from said upper ends of said channels to said lower ends of said channels and to break said beams of light projecting from said plurality of photo-electric cells,

said support means having at least one hanger member fixed thereto above said slide adjacent said upper ends of said channels; at least one flexible member having a first end attached to said hanger member and a second end positioned adjacent said channels whereby said flexible member will be struck by said cans as said cans are deposited at said upper ends of said channels by said conveyor means, and will yield in repsonse to being struck by said cans so as to permit said cans to slide downwardly within said channels,



said slide including an elongated rigid rib positioned between each pair of adjacent channels and extending along the length of said slide, said ribs having an upper edge positioned a predetermined distance above the uppermost portions of said V-shaped channels, whereby said cans will strike said ribs and said flexible member and be oriented with their cylindrical axes parallel to said V-shaped channels as said cans fall by gravity from said conveyor means onto said upper end of said slide

mounting means mounting said slide to said support means for relative movement with respect to said support means, said mounting means including spring means interconnecting said support means and said slide for yieldably holding said slide in a predetermined neutral position with respect to said support means,

a power actuated vibrator attached to said slide and adapted to be actuated to cause vibration of said slide with respect to said support means, and

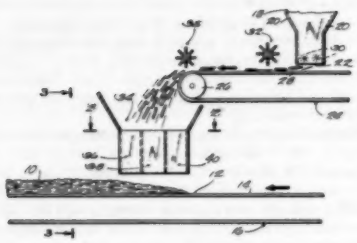
a rotating member rotatably mounted about a horizontal axis adjacent and above said counting means, said rotating member being cylindrical in shape and having an outer circumferential surface positioned in spaced relation above said slide for frictionally engaging said cans as said cans pass beneath said rotating member, power means for rotating said rotating member at a speed and direction which causes said circumferential surface to move at a speed greater than the velocity of said cans as said cans move down said slide by gravity, whereby said rotating member will impart an increased speed to each of said cans when said circumferential surface engages each of said cans.

4,469,216

MULTIPLE FUNNEL FLAKE ALIGNER FOR MAKING A LOOSELY FELTED MAT OF ALIGNED WOOD FLAKES

Bruce A. Haataja, Lake Linden; Tauno B. Kilpela, Atlantic Mine; Gordon P. Krueger, Hancock, and Roy D. Adams, Houghton, all of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Apr. 5, 8198, Ser. No. 365,500
Int. Cl.³ B65G 47/24
U.S. Cl. 198—382 1 Claim



1. An apparatus for forming a loosely felted mat of thin elongated wood flakes with said flakes being aligned in mutually parallel relation, said apparatus comprising

means defining a mat supporting surface including a conveyor belt having an upper belt flight adapted to be continuously moving,

means for holding a quantity of wood flakes,

means for continuously feeding wood flakes from said means for holding onto said supporting surface and for aligning said flakes in substantially parallel side-by-side relation, said means for feeding and aligning including

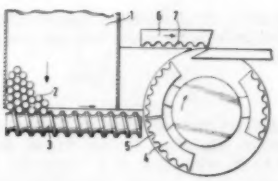
means defining a plurality of rows of funnels, said funnels each including inclined walls having lower edges defining an elongated narrow opening adjacent said supporting surface and upper edges defining an opening wider than said elongated narrow opening and for receiving wood flakes from said means for holding, said wider opening being directly above said elongated narrow opening, said rows of funnels each extending in a direction transverse to the direction of movement of said conveyor belt and each including a plurality of funnels positioned in adjacent side-by-side relation, said funnels being positioned such that said upper edges of adjacent funnels are joined and comprise narrow linear edges, such that said lower edges of adjacent funnels are spaced apart, and such that said elongated narrow openings defined by said lower edges are substantially parallel to the direction of movement of said conveyor belt so that elongated wood flakes deposited by said funnels are aligned substantially parallel to the direction of movement of said conveyor belt, said rows of funnels being positioned in adjacent side-by-side relation in the direction of movement of said conveyor belt, with said rows being staggered such that the longitudinal axes defined by said elongated openings of said funnels of any one of said rows are positioned laterally, with respect to the direction of movement of said conveyor belt, of the longitudinal axes defined by said elongated openings of said funnels of the others of said rows, so that the wood flakes are deposited on said belt continuously and uniformly across said belt.

4,469,217

APPARATUS FOR TRANSPORT OF CAPSULES AND THE LIKE

Günter Meyer, -Rot am See-Brettheim, and Ingbert Pennekamp, Crailsheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 941,618, Sep. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 767,869, Feb. 11, 1977, abandoned. This application Nov. 27, 1979, Ser. No. 97,629
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605775
Int. Cl.³ B65G 47/26
U.S. Cl. 198—425 1 Claim



1. A conveyor apparatus for transporting ampules or the like comprising:

first screw conveyor means for continuously transporting individual ampules in sequence;

first conveyor means;

second conveyor means fed by said first screw conveyor means for transporting a predetermined number of said ampules simultaneously to said first conveyor means, said second conveyor means including:

at least one transport member disposed to pivot about a point and having a periphery with a plurality of recesses therein each for receiving and holding one only of the ampules transferred from said first screw conveyor means; and

drive means for imparting variable speed rotary motion to said transport member, said drive means includes a stationary cam plate having a track defined therein and a cam follower coupled to said at least one transport member, said cam follower being constrained to follow said track, said transport member is coupled to said cam follower by a lever and wherein a further lever is arranged to pivot about the center of said cam follower, a disc positioned to rotate coaxially relative to said cam plate and one end of said further lever is pivotally attached to said disc; whereby, during rotation of said disc, said transport member is constrained to pivot about said point and its angular speed is varied according to the configuration of said cam track.

4,469,218

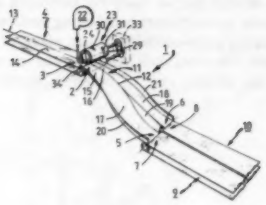
METHOD AND DEVICE FOR DIVIDING A ROW OF IDENTICAL SOLID PRODUCTS

Lionel Cossé, Nantes, France, assignor to Biscuiterie Nantaise - BN, Nantes, France

Filed May 11, 1982, Ser. No. 377,098
Claims priority, application France, May 22, 1981, 81 10259
Int. Cl.³ B65G 47/26
U.S. Cl. 198—438 3 Claims

1. Device for dividing a row of identical solid products brought in on an input conveyor along the axis of symmetry of the latter, from an upstream delivery apparatus to two output conveyors respectively connected to two downstream receiving apparatuses, said products emerging from the delivery apparatus resting flat on their largest surface on said input conveyor, said device including tipping means comprising an input arranged facing the downstream end of the input conveyor associated with the upstream delivery apparatus and two outputs each arranged opposite the upstream end of the output

conveyor associated with one of the downstream receiving apparatuses, the input of the tipping means having the form of a dihedral member whose ridge is substantially aligned with the axis of symmetry of said input conveyor and of which each of the two surfaces is joined to a toboggan run whose lower end forms one of the outputs of the tipping means, and a source of compressed air connected to a distributor mounted trans-



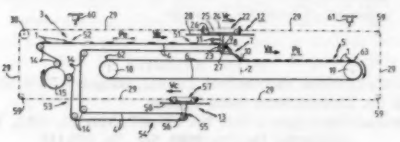
versely above said dihedral and comprising a fixed transverse pipe, continually supplied with compressed air and including at the level of its lower surface opposite the tipping means two orifices each formed straight above one of the tipping surfaces, and a rotary sleeve surrounding the pipe with a slight clearance at the level of said lower surface of the pipe and including ports off-set peripherally respectively formed opposite said orifices of the pipe.

4,469,219

METHOD AND INSTALLATION FOR REGULARIZING THE TRANSFER OF IDENTICAL SOLID PRODUCTS

Lionel Cossé, Nantes, France, assignor to Biscuiterie Nantaise - BN, Nantes, France

Filed Jan. 27, 1982, Ser. No. 343,058
Claims priority, application France, Feb. 3, 1981, 81 02045
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—460 **4 Claims**



1. Installation for regularizing continuously the transfer of identical solid products between an upstream delivery apparatus supplying input products with a maximum input spacing and a downstream receiving apparatus accepting said products with a constant minimum output spacing, including:

an input conveyor comprising an upstream end and a downstream end connected by an endless belt coupled to drive means and actuated with an input speed adapted to the delivery rate of said upstream delivery apparatus,

a means for maintaining the tension of said belt of the input conveyor,

an output conveyor comprising an upstream end and a downstream end connected by an endless belt coupled to drive means and actuated with an output speed less than said input speed,

a spillway whose input is associated with said downstream end of the input conveyor and whose output is arranged above said belt of the output conveyor,

a displacement means for said spillway and said downstream end of the input conveyor comprising a first carriage on which are mounted said spillway and an idling roller forming said downstream end of the input conveyor belt, a differential pulley of which the two input members are respectively connected to said drive means of said input and output conveyor belts and of which the output member is connected to said first carriage through a first clutch, a second clutch being mounted between said drive means for said output conveyor belt and said first carriage, a two-position switch, of which one output is connected directly to the control member of said first clutch and of which the other output is connected to the control member of said second clutch through a time delay element, and

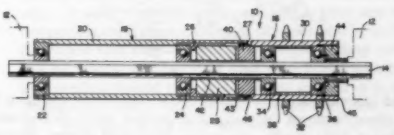
a detector of the presence of said input products on said belt of the input conveyor coupled to said means for maintaining the tension of said belt of the input conveyor and coupled to the input control circuit of the two-position switch of said displacement means.

4,469,220

MAGNETIC COUPLING ASSEMBLY FOR ACCUMULATING POWER ROLL CONVEYOR

Lynn T. Becker, Byron, Mich., assignor to Tri-Veyor Corp., Whitmore Lake, Mich.

Filed Dec. 16, 1981, Ser. No. 331,039
Int. Cl.³ B65G *13/06*
U.S. Cl. 198—781 **4 Claims**



1. A magnetic coupling assembly including a drive sprocket and conveyor roll rotatably mounted on a fixed axle between a pair of spaced conveyor side rails,

said conveyor roll including an elongated substantially hollow tube portion and a permanent magnet mounted within the tube portion at a location spaced inwardly from one of its ends,

said drive sprocket including a hub having a field face member secued within one of its ends in opposing relationship to said permanent magnet, said field face member being spaced from said permanent magnet to form an air gap, means for rotatably driving said hub, said hub being slidably mounted on a bearing cartridge assembly including bearing members and a spacer member, and said field face member being slidably movable along a thrust tube which is held in position on said axle between said bearing cartridge assembly and a stop within said conveyor roll tube portion, and said one end of said hub being movable within said one end of said tube portion,

an adjustment member mounted to the other end of said hub in abutting engagement against one of said bearings of said bearing cartridge assembly, said adjustable member being operable to cause slidable movement of said hub on said bearing cartridge assembly such that said field face member is moved along said thrust tube toward and away from said permanent magnet for varying the air gap between said magnet and field face member, and powered rotative movement of said drive sprocket being transmitted to said conveyor roll due to the magnetic forces acting between said magnet and field face member.

4,469,221

PAPERMAKERS FABRIC OF LINK AND PINTLE CONSTRUCTION

Hans Albert, Vienna, Austria, assignor to Scapa Inc., Waycross, Ga.

Filed Sep. 24, 1982, Ser. No. 422,376
Int. Cl.³ B65G *17/06*
U.S. Cl. 198—851 **18 Claims**

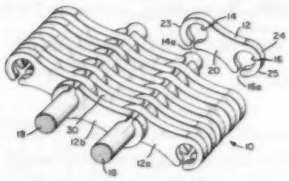
1. A papermakers fabric in the form of a foraminous endless belt, said fabric having upper and lower surfaces and comprising:

a plurality of elongated pintles having substantially equal lengths corresponding with the width of said belt, said pintles arranged in spaced, side-by-side relationship and having their respective longitudinal axes substantially parallel to each other;

a plurality of link members interconnecting said pintles and extending transversely of the respective axes thereof;

said link members each including a pair of spaced end portions, an intermediate portion between said spaced end portions, and top and bottom surfaces defining the upper and lower surfaces of said fabric, each of said end portions including an aperture sized to permit a pintle to be rotatably received therein, the spacing between said apertures defining the axial spacing between said pintles;

said link members including open access slots extending from each of said apertures to one of said top and bottom surfaces to permit lateral access to said apertures;



said link members removably connected to and spanning the space between two adjacent pintles, each link member being individually removable from said pintles, through the open access slots thereof, independent of adjacent link members and without removal of said pintles;

said link members being arranged in alternating relationship so that alternate links extend from a first pintle to a second pintle positioned on one side thereof and the intermediate links extend from said first pintle to a third pintle positioned on the side of said first pintle opposite the side on which said second pintle is positioned;

said alternating relationship of said links defining a plurality of openings in said fabric to permit the passage of fluids therethrough, in such manner that there is uniformity of permeability across and along the fabric; and

said permeability, as defined by the relationship of the total area of said openings to the total area of said fabric, being dependent upon the lateral spacing of said pintles and on the lateral spacing of said links, thereby providing the ability to produce fabrics of differing permeabilities.

4,469,222

TWO-PIECE BEVERAGE CARRIER

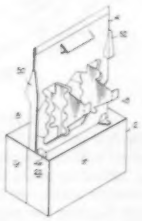
Earl J. Graser, Monroe, La., assignor to Manville Service Corporation, Denver, Colo.

Filed Feb. 18, 1982, Ser. No. 349,800
Int. Cl.³ B65D *75/00*
U.S. Cl. 206—180 **2 Claims**

1. A two-piece basket style beverage carrier formed from paperboard comprising:

(a) a generally rectangular shaped open top shell comprising a bottom panel, a pair of side panels and a pair of end panels; the bottom panel having a plurality of tab receiving openings on opposite ends thereof; and

(b) a partition insert comprising a first insert panel and a second insert panel adhesively laminated together, the partition insert having handle means and extending longitudinally between the end panels of the shell, each insert panel having glue tabs at each end adhesively secured to the shell end panels and the insert panels having a pair of glue tabs extending through the openings in and adhesively secured to the shell bottom panel; the first insert panel having a first pair of butterfly partitions hingedly attached to the first insert panel along vertical score lines and extending perpendicular to the plane of the first insert panel, the score lines being located intermediate the ends the first pair of butterfly partitions with a shorter section of each of the first butterfly partitions extending transversely from the first insert panel toward one of the shell side panels and a longer section of each of the first butterfly partitions extending transversely from the first insert panel toward the opposite shell side panel, the longer sections of the first butterfly partitions being adhesively secured to at least one of the shell side panels by a first pair of butterfly partition glue tabs; the second insert panel having a second pair of butterfly partitions hingedly attached to the second insert panel along vertical score lines and extending perpendicular to the plane of the second insert panel, the score lines being located intermediate the ends of the second pair of butterfly partitions with a



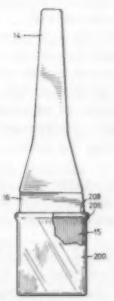
shorter section of each of the second pair of partitions extending transversely from the second panel toward one of the shell side panels and a longer section of each of the second pair of butterfly partitions extending transversely from the second panel toward the opposite shell side panel, the longer sections of the second butterfly partitions being adhesively secured to at least one of the shell side panels by glue tabs, the long sections of the second pair of partitions being substantially one half the height of the short sections, the first pair of butterfly partitions and the second pair of butterfly partitions being adhesively laminated together with the short sections of each set of partitions adhesively secured to the long sections of the other set of butterfly partitions.

4,469,223

PAINT BRUSHES

Morley L. Smith, Beaconsfield, Canada, assignor to T. S. Simms & Co. Limited, Saint John, Canada

Continuation-in-part of Ser. No. 377,470, May 12, 1982,. This application Dec. 15, 1982, Ser. No. 450,116
Int. Cl.³ B65D *81/22, 85/00*
U.S. Cl. 206—209 **10 Claims**



1. A storage device for paint brushes comprising;

(a) a receptacle having a chamber formed therein, said chamber being proportioned to receive at least a major portion of a paint brush head in a close fitting relationship,

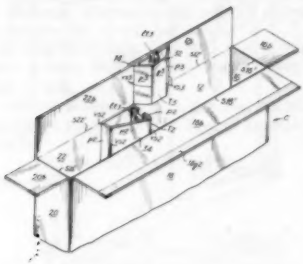
(b) a closure cap adapted to sealingly engage the receptacle to seal said chamber.

4,469,224

CARTON BLANK AND CARTON FOR A BICYCLE

Dale L. Ritter, St. Louis, Mo., assignor to International Paper Company, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,840
Int. Cl.³ B65D *85/68*
U.S. Cl. 206—335 **28 Claims**



1. A carton blank for constructing a container, said blank being formed from a piece of sheet material having a substantially rectangular shape, and including, in order, from one end to the other of said piece,

a first partial back wall portion having an outer vertical edge, and end wall portion, a front wall portion, another end wall portion and a second partial back wall portion having an outer edge part,

said portions having vertical score lines between them and being foldable with respect to each other along said vertical score lines and all including top flaps and bottom flaps separated from their respective adjacent portions by colinear horizontal score lines,

the outer edge of said first partial back wall portion being securable to the outer edge part of the second partial back wall portion,

said second partial back wall portion having three tongue portions separated by cuts extending outwardly from said outer edge part in line with said horizontal score lines, and

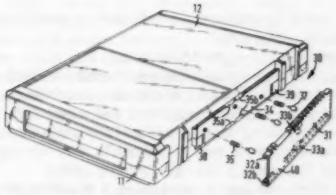
at least one of said tongue portions having multiple vertical score lines for folding parts of said tongue portion between said vertical score lines into a strut column extending fully between walls of the said container.

4,469,225

TAPE CASSETTE CASES WITH LOCKING MECHANISM

Kenji Takahashi, Tagajo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,409
Claims priority, application Japan, Dec. 15, 1981, 56-187038
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **12 Claims**



1. (Twice Amended) A tape cassette case for storing a cassette having a tape, said tape cassette case comprising:

a main wall and a cover wall each having a periphery, and peripheral walls which extend from at least part of said periphery of each of said main and cover walls, said walls being closable to form an enclosure defined by said main wall, said cover wall and said peripheral walls;

hinge means forming a back wall, and connecting a part of said periphery of said main wall to part of said periphery of said cover wall;

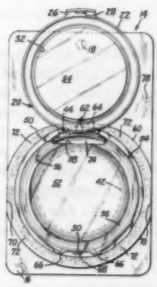
locking means disposed on said peripheral walls of said main wall and said cover wall at a location opposite said hinge means, said locking means comprising a rigid sliding member which is mounted on one of said peripheral walls for slidable movement in a predetermined path between two end positions and being bodily displaceable in directions transverse to said predetermined path, spring means disposed between said rigid slider member and said one peripheral wall for biasing said rigid slider away from said one peripheral wall in a direction transverse to said predetermined path, securing means operably connected to said rigid slider member for preventing sliding motion of said rigid slider in said predetermined path at both said two end positions thereof, said securing means, said spring means, and said rigid slider member cooperating such that said rigid slider member at either of said two end positions is slidable in said predetermined path only when said rigid sliding member is bodily displaced in a direction transverse to said predetermined path and at least one member projecting from the other of said peripheral walls, so that when said case is closed, said rigid sliding member can be bodily displaced in said direction transverse to said predetermined path and slidably moved in said predetermined path to one of said two end positions to engage with said projecting member, thereby locking said main wall and said cover together, said rigid sliding member also being bodily displaceable in said direction transverse to said predetermined path and slidably movable in said predetermined path to the other of said two end positions to disengage said rigid slider member from said projecting portion, thereby allowing said case to be opened.

4,469,226

BLISTER PACK PANEL FOR FACE POWDER COMPACT DISPLAY

Arthur Matney, 360 Furman St., Brooklyn, N.Y. 11201

Filed Aug. 23, 1983, Ser. No. 525,644
Int. Cl.³ B65D *73/00*
U.S. Cl. 206—470 **6 Claims**



1. A compact display unit permitting a compact to be opened to check the color of face powder therein by the purchaser comprising:

a plate-like backing member to which an enclosing cover is adapted to be affixed;

a pre-cut and pre-formed blister serving as the enclosing cover for the bottom of the compact enclosed therein and heat sealed in flat blister to panel relationship to said panel;

a compact comprising a top, a bottom, a hinge, and opposite said hinge a clasp consisting of a latch and a latching element, said compact being provided with a powder chamber in the bottom holding powder, a mirror chamber

in the top holding a mirror, and face powder in said powder chamber;

said pre-cut and pre-formed blister having a top wall which fits over the powder chamber of said compact between the mirror and the powder, an indented portion forming a depending stiffening groove which fits flat against the bottom of the compact, a straight cut-out portion adjacent the hinge of the compact which is tangent to the edge of the powder chamber and directly opposite said cut-out portion folded over portions constituting an intermediate projection for the latching parts of the clasp and projecting portions to the right and left of said intermediate projection which project from the side walls of said blister to register the clasp and hinge with the blister in place; and

said blister further provided with a flange at its bottom which surrounds the blister except at the hinge portion of the compact where the flange is provided with flange termination portions to register against the sides of the hinge when the flange is heat sealed to the panel to securely attach the blister around the bottom of the compact.

4,469,227

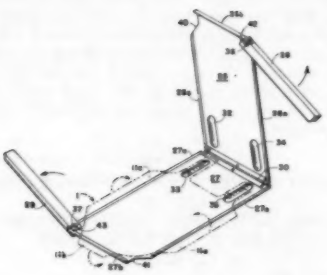
PACKAGE FOR CRYOGENICALLY FROZEN LIQUIDS

Clifford Faust, 4316 St. Charles Rd., Bellwood, Ill. 60104

Filed Aug. 17, 1983, Ser. No. 524,100

Int. Cl.³ B65D *30/10, 33/00;* **B65B** *63/08;* **F25D** *3/08*

U.S. Cl. 206—527 **20 Claims**



1. A package for a cryogenically frozen liquid material comprising:

a normally flexible, slack-fillable, enclosed, flat plastic pouch formed by two layers of a cryogenically durable, transparent, thermoplastic polymer film which is heat-sealed to define inner edges of the pouch enclosure; and

laminated fins extending along at least about 15% of the outer peripheral edges of the pouch, said fins being extensions of said two layers of film which project outwardly beyond the heat-sealed area adjacent said inner edges of the pouch enclosure, said fins being laminated together along their inner edges by said heat-sealed area and also at least in a marginal area adjacent to their outermost peripheral edges.

4,469,228

INTERFERON KIT

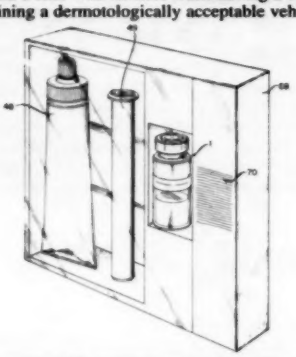
Michael A. Zupon, Madison, N.J.; Joel A. Sequeira, New York, N.Y.; Alan S. Kirschner, East Brunswick, and Pui-Ho Yuen, Edison, both of N.J., assignors to Schering Corporation, Madison, N.J.

Filed May 31, 1983, Ser. No. 499,138

Int. Cl.³ B65D *81/32*

U.S. Cl. 206—568 **5 Claims**

1. A kit for formulating and dispensing an alpha type interferon gel composition comprising (a) a vial having an open end aseptically sealed and containing about 1×10^4 to 5×10^8 International Units of lyophilized alpha type interferon formulation prepared from an alpha type interferon having a specific activity of at least 5×10^7 International Units/mg total protein; (b) and a tube with flexible walls having a sealed open end containing a dermotologically acceptable vehicle which



contains a compatible preservative and a sufficient amount of polyoxyethylene polyoxypropylene block polymer for the vehicle to be liquid at 15° C. or below and which together with the lyophilized alpha interferon gels at 15° C. and above.

4,469,229

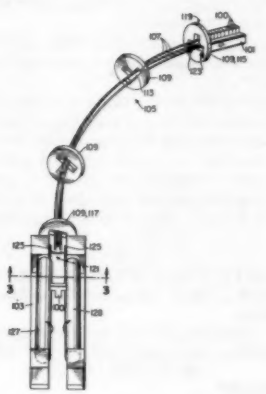
CONVEYING APPARATUS

Walter I. Cronan, 125 Lakeview Ave., Leonia, N.J. 07605

Filed Apr. 15, 1982, Ser. No. 368,681

Int. Cl.³ B07C *5/02;* **B65G** *47/24, 11/10*

U.S. Cl. 209—544 **12 Claims**



1. A track for conveying workpieces of predetermined size and shape, comprising:

a plurality of elongated filaments;

means for aligning said filaments parallel to each other in a predetermined spatial relationship according to the size and shape of said workpieces, said means defining a passageway along the length of said apparatus through which said workpieces may travel while they are captured by said filaments;

said alignment means comprising a plurality of alignment frames spaced along the length of said filaments, the number of said frames being dependent on the length of said filaments and the desired amount of curvature in said track along its length;

said alignment frames each comprising a plate with a plurality of arms adjustably mounted relative to said plate, each of said arms having at least one filament retaining channel

on its periphery, said channel shaped to slidably engage a corresponding one of said filaments along a portion of the filament's length while retaining the filament in the channel.

4,469,230

SORTING CYLINDER FOR SEEDS AND OTHER GRAINS

Frank O. Gorlitz, Braunschweig, Fed. Rep. of Germany, and Werner Hohener, Oberuzwil, Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

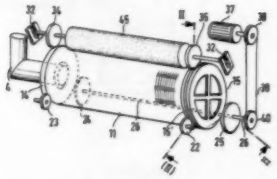
PCT No. PCT/EP81/00023, § 371 Date Nov. 6, 1981, § 102(e) Date Nov. 6, 1981, PCT Pub. No. WO81/02695, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 20, 1981, Ser. No. 320,952

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011173

Int. Cl.³ B07C *5/36*; B07B *1/22*

U.S. Cl. 209—683 **11 Claims**



1. A sorting cylinder for seeds and other grains, comprising:
a horizontal calibrating cylinder;
first, second, third and fourth supporting rolls for supporting said calibrating cylinder, said first and second rolls being arranged on opposite ends of said calibrating cylinder;
a stationary machine casing surrounding said calibrating cylinder, said casing having a longitudinal side, an inlet for receiving material to be sorted and means for leading off fractions thereof and a detachable longitudinal side wall wherein said calibrating cylinder further comprises a running ring and a driving ring, said driving ring having a circumferential keyway at an end on a driving side thereof and wherein said fourth supporting roll further comprises a driving wheel frictionally engaged with said keyway, said driving wheel having a correspondingly wedge-shaped profile for enabling the calibrating cylinder to be freely lifted off upwardly and to be mounted and dismounted through said longitudinal side of said machine casing wherein said driving ring has a laterally disposed circular-cylindrical running surface and said first supporting roll is arranged on the driving side and has a circular-cylindrical supporting surface such that the running surface rests on said first supporting roll;
a cleaning device for cleaning said calibrating cylinder wherein said calibrating cylinder and said cleaning device utilize said driving ring as a joint driving element and wherein said cleaning device further comprises a transmission wheel having a corresponding wedge profile for cooperative engagement with said running wheel;
U-shaped guide means fastened to said machine casing and within which said cleaning device is guided in a displaceable manner relative to said calibrating cylinder; and
sliding means located on first and second ends of said cleaning device and which is inserted into said guiding means.

4,469,231

DESK-TOP STORAGE UNIT

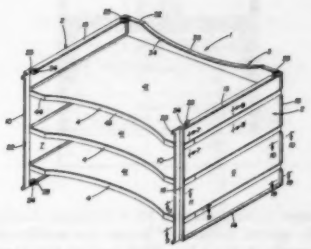
Bruce A. Hehn, North Canton, Ohio, assignor to Alpha Enterprises, Inc., Canton, Ohio

Filed Jun. 16, 1982, Ser. No. 388,745

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—11 **20 Claims**

1. A readily assembled desk-top storage unit including:
(a) a pair of similar side panels, each of said panels having front and rear edges, and formed with a plurality of spaced horizontally extending open-end slots, said slots extending from the panel rear edge toward the panel front edge, each of said panels having a channel formed on an inner surface adjacent the rear edge and extending vertically along said rear edge;
(b) a plurality of shelves having side edges and front and rear edges, each of said shelves being formed with channels along said side edges, each of said side edge channels



being slidably engaged in a respective slot of the side panels to mount said shelves on the side panels with said shelves extending horizontally therebetween;
(c) a back panel having side edges, said side edges being received within the side panel channels for mounting the back panel on and extending between the side panels; and
(d) means formed on each of the shelves and engageable with the back panel for connecting said back panel with the shelves.

4,469,232

DISPLAY STAND

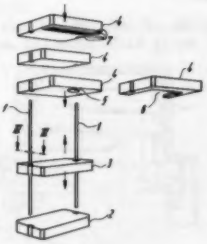
Peter Lusch, Bielefeld, Fed. Rep. of Germany, assignor to Ferdinand Lusch GmbH & Co. KG., Bielefeld, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,520

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 8106318[U]

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—189 **16 Claims**



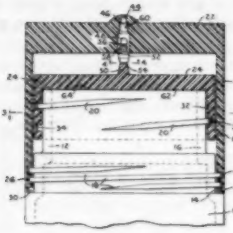
1. A display stand comprising an upright frame and at least one base structure, said base structure being assembled of at least two prismatic end sections each including three side plates and an end cover plate connected to said three side plates and defining a narrow free face, and a bridge-like intermediate section including two opposite side plates and another cover plate and defining two opposite narrow free faces connectable to the narrow free faces of said prismatic and sections; coupling means for rigidly connecting said sections arranged in face-to-face relationship; and at least one upright U-shaped piece provided in said base structure connecting two of said sections snd supporting said frame.

4,469,233

TAMPER EVIDENT CLOSURE

Stanley C. Wegscheid, 200 Riverview Dr., LaBelle, Fla. 33935

Filed Mar. 10, 1983, Ser. No. 474,139
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—230 **9 Claims**



1. A tamper evident closure for a container having a neck with axially spaced sections of larger and smaller diameters, external threads having a low pitch lead on the larger diametered neck section, external threads having a high pitch lead on the smaller diametered neck section, said closure comprising a two part closure member including an outer cap having internal threads engaging the low pitch external threads on the larger diametered neck section, an inner cap slidably mounted in the outer cap and having internal threads engaging the high pitch external threads on the smaller diametered neck section, frictional overdrive means between the outer and the inner cap, and cooperating indicator means between the inner and outer cap to indicate if the closure has been opened.

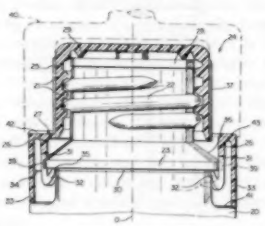
4,469,234

TAMPERPROOF CONTAINER CLOSURE

Werner Deussen, Scharfensteinstr. 17, D-6228 Eltville (Rhein), Fed. Rep. of Germany

Continuation-in-part of Ser. No. 442,785, Nov. 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 395,085, filed as PCT DE81/00172, Oct. 9, 1981, § 102(e) Jun. 10, 1982, abandoned. This application Feb. 4, 1983, Ser. No. 463,831

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038453; Portugal, Nov. 20, 1981, 74017
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **20 Claims**



1. A closure for a container having a body provided with a threaded neck and a radially outwardly projecting peripheral flange located between the threads thereof and said body, comprising:

a substantially cylindrical cap of resiliently deformable material provided with internal threads mating with those of the container neck;

a telltale ring of like material connected to the rim of said cap by frangible webs, said ring being provided with peripherally spaced-apart lugs having inwardly projecting extremities resiliently hooked onto said flange upon an initial screwing of said cap onto said neck, thereby preventing any unscrewing of said cap from said neck without forcible detachment of said ring from said rim; and

a skirt on said ring spacedly surrounding said lugs and projecting beyond said extremities for protecting same against attempts to disengage them from said flange.

4,469,235

CLOSURE WITH UPWARDLY EXTENDING TABS

Jeremy L. Parker, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Lancaster, Pa.

Filed Sep. 14, 1983, Ser. No. 532,175
Int. Cl.³ B65D *43/38, 43/40*
U.S. Cl. 215—295 **12 Claims**

1. A closure for sealing an open-topped container having an external screw thread, the closure comprising:

a top wall for extending across the open top of the container;

an annular side wall integrally joined to the top wall about the periphery of the top wall and depending therefrom, and having an internal screw thread formed on it for engagement with the external screw thread of the container; and

means to facilitate rotation of the cap comprising a plurality of tabs extending upwardly from the top wall of the cap providing a plurality of surfaces which may be engaged to apply torque to the cap;

the annular side wall having an outer surface which includes a portion of generally circular cross section defining a maximum radius for the closure.

4,469,236

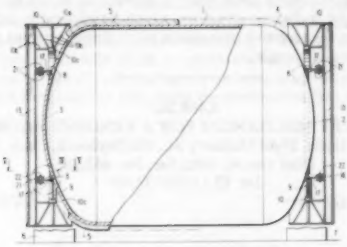
STORAGE VESSEL SUPPORT DEVICE

Jean-Jacques Marsault, Saint-Arnoult-en-Yvelines; Jean-Claude Semedard, Paris, and Jean-Pierre Peyrelongue, Pontchartrain, all of France, assignors to Stein Industrie and Electricite de France, both of, France

Filed Aug. 31, 1982, Ser. No. 413,314
Claims priority, application France, Sep. 4, 1981, 81 16838
Int. Cl.³ B65D *90/12*
U.S. Cl. 220—1.5 **4 Claims**

1. A support device for a heavy horizontal storage vessel having convex ends and walls which are thin in relation to its diameter, said device comprising, at each end of said vessel, a short annular stiffener coaxial with said vessel end and being of sufficient diameter to distribute and reduce stresses to a low value, a flexible semi-circular plate member forming a cradle for said stiffener, its radius of curvature being greater than that of said stiffener to an extent sufficient to permit differential radial expansion, a rigid annular plate member disposed substantially in the same vertical plane as said stiffener, forming a cradle for said flexible plate member, its radius of curvature

being greater than that of said flexible plate member to an extent sufficient to permit differential radial expansion, and



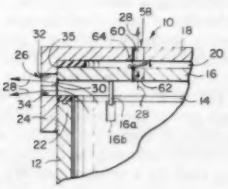
means for connecting said rigid annular plate member axially and laterally to said stiffener.

4,469,237

SPRING LID LIFTER PRESSURE COOKER

James Zerdian, C/O George Spector 3615 Woolworth Bldg. 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Sep. 28, 1983, Ser. No. 536,535
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—209 **3 Claims**



1. A pressure cooker which comprises:

(a) a container having an external threaded peripheral rim;

(b) a gasket affixed to the rim of the container;

(c) a pressure plate that sits upon the gasket covering the rim of the container;

(d) a cover for the container having an internal threaded peripheral flange, the cover having a plurality of lateral through openings on the flange;

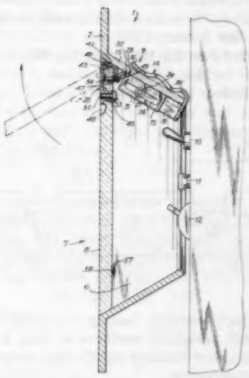
(e) a compression seal providing a seal between the cover and the pressure plate the compression seal and pressure plate effectively sealing the lateral through openings when the cover is threaded onto the container, the seal comprising a compressionable material compressing up against the cover when vapor pressure in the container exceeds a predetermined pressure causing the pressure plate to rise up and uncover the lateral through openings and vent the container vapor outwardly when the seal has compressed sufficiently up against the cover when the vapor pressure exceeds the predetermined pressure and the seal material having memory and restoring downwardly causing the pressure plate to lower down to a position sealing the lateral through openings when the vapor pressure in the container is less than the predetermined pressure.

4,469,238

PROTECTIVE COVER ARRANGEMENT FOR EQUIPMENT

Lawrence A. Ranalli, 127 Borden Rd., Middletown, N.J. 07748

Filed Jan. 30, 1984, Ser. No. 575,015
Int. Cl.³ B65D *51/18*
U.S. Cl. 220—254 **18 Claims**



1. A protective cover arrangement for use as a closure for an opening in a panel of a casing, especially of a data processing machine such as a computer, which opening is bounded at least along a part of its periphery by a flange extending from the panel into the interior of the casing, comprising

a substantially plate-shaped cover having an outline substantially corresponding to that of the opening; and

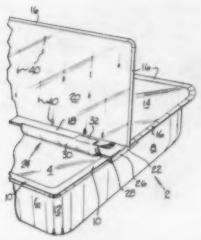
means for mounting said cover on the flange of the panel of the casing for pivoting movement between a closing position in which said cover extends across said opening, and an open position in which said cover extends frontwardly from the panel.

4,469,239

CONTAINER HAVING REMOVABLE CLOSURES

Daniel J. Gallery, IV, and Stanley A. Gallery, both of 241 Grant, Denver, Colo. 80203

Filed Oct. 17, 1983, Ser. No. 542,263
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—337 **20 Claims**



1. A container comprising:

an open top box like member having a bottom wall and a plurality of side walls;

means extending between and supported by a pair of opposed side walls and having means defining at least one slot;

at least one lid having a bottom surface, portions of which

are adapted to be supported by a plurality of said side walls; and

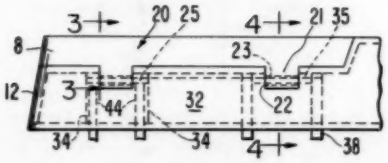
planar means depending from said bottom surface and having at least a portion thereof located within said slot when said lid is in an operative position.

4,469,240

HINGED COVER FOR TWO-PART CONTAINER

Robert L. Lathrop, San Jose, Calif., assignor to Solid State Timer, Ltd., San Ramon, Calif.

Filed Jun. 22, 1983, Ser. No. 506,756
Int. Cl.³ B65D *43/14*
U.S. Cl. 220—343 9 Claims



1. In a two-part container having a housing bottom and a housing top with peripheral surfaces to form a substantially closed container, said housing top having a top surface; the improvement comprising:

a cover extending over at least part of said top surface;

said housing bottom including internal spaced post means;

means to hinge said cover to said housing top, said hinge means comprising cut-out means adjoining a peripheral edge of said housing top juxtaposed to and spaced from said post means;

hinge leaf means extending from an edge of said cover for positioning in said cut-out means;

hinge pintle means extending from said hinge leaf means, and

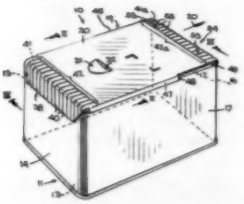
bearing surface means in said housing top extending from said cut-out means for receiving said pintle means; said pintle means being insertible into said bearing surface means prior to assembly of said bottom housing onto said top housing and wherein when said top and bottom housings are assembled, said post means abuts said pintle means confining said hinged cover in said assembled housing.

4,469,241

TAMPER AND CHILD-RESISTANT CONTAINER

Scott Westphal, 1 Battleridge Trail, Totowa, N.J. 07512

Filed Jul. 1, 1983, Ser. No. 510,328
Int. Cl.³ B65D *43/20*
U.S. Cl. 220—346 24 Claims



1. A tamper-resistant container comprising a base defining a volume for holding a product, the base having an opening communicating with the volume and two edge portions which are substantially parallel and define a plane extending adjacent the opening:

a lid having two spaced-apart edges extending substantially parallel to each other;

means associated with said two base edges and said two lid edges for slidably securing said lid to said base overlying said opening; and

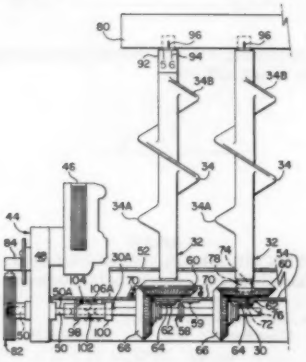
means engaging said base and said lid over a substantial portion thereof upon relative movement of the base and the lid including structure which permanently deforms upon said relative movement or an initial attempt to reclose the container.

4,469,242

DELIVERY MECHANISM FOR A VENDING MACHINE

Ralph J. Costa, Eight Mulberry St., Old Saybrook, Conn. 06475

Filed Oct. 6, 1982, Ser. No. 433,982
Int. Cl.³ G07F *11/00*
U.S. Cl. 221—4 20 Claims



1. An adjustable vending apparatus for delivering different products and comprising a power operated, rotary actuator shaft having a plurality of gears fixed thereon, and a plurality of rotary dispensing shafts each having a gear fixed thereon and meshingly engageable with a gear of the actuator shaft, each gear of the actuator shaft normally being in a vend position engaging a gear of a dispensing shaft for a given product delivery, and each gear of the actuator shaft being retractable into an adjust position in disengaged relation to its dispensing shaft gear for selectively adjusting the relative angular position of that dispensing shaft for a product delivery changeover.

4,469,243

COMBINATION CARTON AND SHIPPING PACKAGE, DISPENSING SYSTEM THEREFOR

John M. Ito, Cheltenham, Canada, and James D. Cotton, Livonia, Mich., assignors to Kimberly-Clark Corporation, Neenah, Wis.

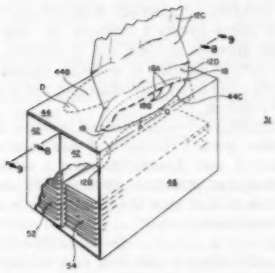
Filed Mar. 31, 1982, Ser. No. 363,985
Int. Cl.³ B65H *1/04*
U.S. Cl. 221—34 15 Claims

1. A dispensing system for dispensing folded wipers from a tall dispensing carton, said wipers being folded into segments in a chosen manner, said tall carton having a height greater than the length of the transverse fold of the widest segment of said folded wipers, said system comprising:

(a) a substantially continuous web of wiper material of a predetermined length having disposed therein a plurality of transverse perforation lines disposed substantially equidistant to form a plurality of serially connected separable wipers within said web, each of said perforation lines comprising a plurality of perforation teeth and slits disposed substantially equidistant, the slit length being approximately 220 times the tooth width, at least one of the first slit and last slit in each perforation line extending to a side edge of said web, each of said separable wipers being hard-folded into lengthwise segments in alternating oppo-

site directions to form a plurality of folded segments of a given format and disposed in a vertical stack on said carton; and

(b) a dispensing port means disposed in a top panel of said carton for providing a centrally disposed port having an oval shape which permits detaching a leading separable wiper from said stack to yield a dispensed wiper, the detachment of said leading wiper being initiated at one of said first and last slits along the perforation line between



said leading and trailing wiper straddling said side edges of said oval port, and following dispensing of said lead wiper for effecting partial dispensing of said trailing wiper, said trailing wiper entering said oval port immediately after detachment of said lead wiper, said trailing wiper being retained within the boundaries of said oval opening by said side edges in a manner opposing fallback of said trailing wiper onto said stack of wipers, said dispensing being performed without the need for mechanical assistance.

4,469,244

SUCTION-TYPE DISTRIBUTOR FOR A SINGLE-SEED SEEDER

Jean-Pierre Maury, Montereau, France, assignor to Nodet-Gougis, Montereau, France

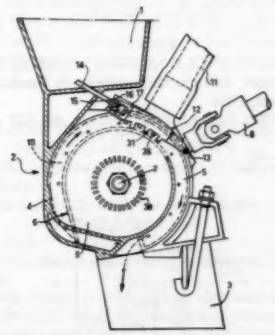
PCT No. PCT/FR81/00104, § 371 Date Apr. 12, 1982, § 102(e) Date Apr. 12, 1982, PCT Pub. No. WO82/00562, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 20, 1981, Ser. No. 375,128

Claims priority, application France, Aug. 21, 1980, 80 18291

Int. Cl.³ A01C *7/04*

U.S. Cl. 221—200 **7 Claims**



1. A suction-type distributor for a single-seed seeder including a rotary distribution disk provided with a circular row of apertures, a casing having its interior divided by the disk into two adjacent enclosures wherein one serves as a seed reservoir and the other, lying around a portion of the path of motion of the disk apertures, constitutes a vacuum chamber, a double-seed removing device fastened adjacent the disk around the path of the apertures and a stirrer located in the seed reservoir adjacent to the disk, whereby the double removing device essentially consists of two adjoining selector plates each pivoted at one end on the casing about a pin at right angle to the distribution disk and so disposed as to have one edge lying around the path of the apertures of said disk, in that each of said edges of the selector plates is provided with a plurality of successive projections having a gap therebetween and extending radially towards said apertures, and in that the projections of one plate are located on one side of said path while the projections of the other plate are offset and located on the opposite side of the path and in front of the gaps between the projections of the first plate.

4,469,245

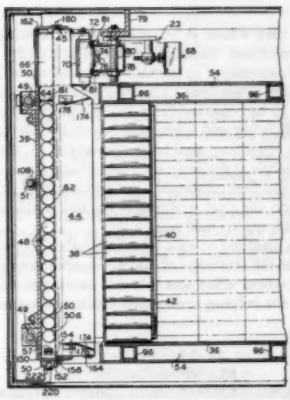
BULK LOADED CHANGE DISPENSING APPARATUS

Leonard A. Fish, and David Sverdlik, both of Chicago, Ill., assignors to Casino Technology, Schiller Park, Ill.

Filed Jun. 23, 1981, Ser. No. 276,711

Int. Cl.³ B65H *5/02*

U.S. Cl. 221—225 **17 Claims**



1. Change dispensing apparatus comprising, in combination; a magazine having means for supporting a plurality of coin rolls in plural stacked horizontal layers without intervening partitions, transport means for receiving a plurality of coin rolls in a group from said magazine and transporting them to a dispensing mechanism from which they are dispensed into a dispensing compartment, pusher means for pushing a group of the topmost layer of coin rolls of said magazine laterally toward said transport means, each of said layers being made up of plural rows and columns of coin rolls, and including a tilt tray adjacent said magazine for receiving a row of coin rolls as said topmost layer is pushed laterally, and means for rotating said tilt tray for swinging said coin rows from horizontal to vertical position on said transport means.

4,469,246

SINGLE VEND NEWSPAPER APPARATUS

Henry J. Albright, West Des Moines, and Arthur N. Wirstlin, Altoona, both of Iowa, assignors to Fawn Engineering Company, Des Moines, Iowa

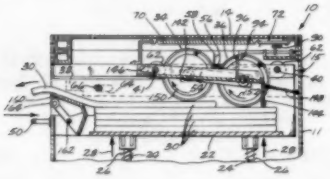
Filed Jul. 14, 1982, Ser. No. 398,107

Int. Cl.³ B65H *3/06*

U.S. Cl. 221—225 **6 Claims**

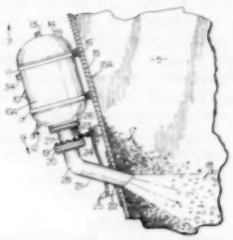
1. Apparatus for dispensing newspapers one at a time, comprising:

a frame;
a wheel assembly movably attached to said frame;
at least one wheel having a rotational axis;
means for allowing said wheel to rotate in a first rotational direction about said rotational axis and preventing said wheel from rotating in a second rotational direction about said rotational axis;
platform means for holding a plurality of newspapers;
means for biasing said platform means a third direction towards said wheel whereby the newspaper on said platform means nearest said wheel will contact said wheel;
means for allowing movement of said wheel and wheel assembly with respect to said platform means in a fourth direction generally transverse to said third direction and generally transverse with respect to the axis of said wheel



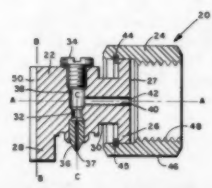
whereby said wheel is prevented from rotating in said second rotational direction and is frictionally engaged with said newspaper in contact with said wheel, thereby causing said newspaper to move generally in said fourth direction to be removed from said platform means;
means for allowing said wheel and wheel assembly to move in a fifth direction generally transverse to the axis of rotation, while at the same time permitting rotation of said wheel in said first rotational direction whereby said wheel will roll on the next newspaper on said platform means which is closest to said wheel; and
assist means attached to said wheel assembly for selectively pushing on the rear edge of said newspaper in engagement with said wheel when said wheel is moving in said fourth direction for helping to dispense thick newspapers.

4,469,247
BLAST AERATOR
L. Kirk Tompkins, Little Rock, Ark., assignor to Global Manufacturing Inc., Little Rock, Ark.
Filed Mar. 3, 1982, Ser. No. 354,310
Int. Cl.³ B67B 7/24
U.S. Cl. 222—3 **6 Claims**



1. A blast aerator comprising:
a generally cylindrical, rigid tank having an axis, and a front end fitted with a blast discharge opening coaxially aligned with respect to said axis;
a rigid, elongated, tubular, blast discharge pipe adapted to be coaxially secured and aligned within said tank, said pipe having a front output end, a rear end positioned interiorly of said tank, a counterbored, internal front shoulder seat, and a predetermined intermediate internal diameter;
a piston seat assembly coaxially positioned within said blast discharge pipe in abutting relation with respect to said internal shoulder, said seat assembly including a rear, chamfered seat;
a resilient, generally cylindrical, dual diameter piston coaxially disposed within said blast discharge pipe and axially displaceable between an aerator tank fill position and an aerator tank exhaust position; an intermediate portion of said piston having a diameter substantially equal to said blast output pipe predetermined intermediate diameter, and a front portion of said piston having a diameter less than said piston intermediate diameter portion and terminating in a front, chamfered portion adapted to matingly engage said piston seat assembly chamfered seat when said piston assumes aid aerator fill position;
said piston including a shoulder defined between said intermediate diameter portion thereof and said reduced diameter portion thereof, said shoulder forming a working surface against which tank pressure may urge said piston toward said rear end of said blast discharge pipe in response to venting of said cavity;
vent means defined in said blast discharge pipe for outputting air temporarily stored within said tank through said blast discharge pipe front ouptut end in response to movement of said piston to said aerator tank exhaust position;
end cap means adapted to be coaxially, sealingly coupled to said blast discharge pipe rear end for limiting rearward axial displacement of said piston, the end cap means operable to define a sealed cavity between it and said piston at the rear of said blast discharge pipe; and,
valve control means in fluid flow communiation with said cavity for filling said cavity and thus said tank and for subsequently initiating an output blast by venting said cavity, said valve control means comprising:
first air injection fitting means coupled to said end cap means for injecting air into said cavity rearwardly of said piston whereby to pressurize said cavity and move said piston into sealing engagement with said chamfered seat;
check valve means coupled to said end cap in fluid flow communciation with said cavity for pressurizing the interior of said tank in response to pressurization of said cavity; and,
solenoid valve means for first actuating said air injection fitting means whereby to fill said tank through said check valve means and then depressurizing said cavity at a preselected time whereby to suddenly exhaust said tank through said output pipe in response to resultant rearward displacement of said dual diameter piston.

4,469,248
RIGHT ANGLE NOZZLE ASSEMBLY
Peter J. Petrecca, Atlanta, Ga., assignor to Nordson Corporation, Amherst, Ohio
Filed Aug. 12, 1982, Ser. No. 407,422
Int. Cl.³ B67D 5/22
U.S. Cl. 222—48 **6 Claims**



1. A nozzle for use with a fluid dispenser comprising:
a nozzle body having a nozzle tip, said nozzle tip communi-

cating with the dispenser so that fluid is dispensable through said tip;

said nozzle body defining an integral distal projection adjacent the distal edge thereof, said projection projecting past said tip so as to protect said tip from physical contact with an external object;

said distal edge of said nozzle body having a slot therein, said slot being directionally aligned with said nozzle tip so that the dispensation direction of said nozzle tip can be visually perceived; and

means for connecting said nozzle body to the dispenser, said connecting means being movable between a first position in which said nozzle body is securely attached to the dispenser and a second position in which said nozzle body is rotatable relative to the dispenser, and said slot is receivable of a tool for rotating said nozzle body so that when said connecting means is in the second position said nozzle tip can be aligned in a preselected direction.

4,469,249

APPARATUS FOR DISPENSING LIQUIDS

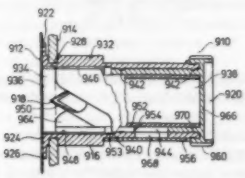
Jon H. Malpas, Ocean Grove, and Alan R. Calder, Melbourne, both of Australia, assignors to Diemoulders Proprietary Limited, Victoria, Australia

Filed Nov. 20, 1981, Ser. No. 323,665

Claims priority, application Australia, Dec. 4, 1980, PE6755; Jun. 3, 1981, PE9152; Aug. 14, 1981, PF0260

Int. Cl.³ B67B *7/24*

U.S. Cl. 222—83 **16 Claims**



1. Apparatus for dispensing liquids from a container, said apparatus including a body, a probe mounted within said body, and a handle mounted at one end; said probe being adapted to be moved by initiator means within said body upon or prior to an initial dispensing operation of said apparatus to an extended non-returnable position whereby such probe movement penetrates or ruptures a frangible diaphragm at or adjacent the other end of said body, said probe having retaining means extending radially outwardly therefrom which are located in corresponding slots in said body so as to prevent rotation of said probe about its longitudinal axis when moved to said extended non-returnable position.

4,469,250

SQUEEZABLE DISPENSING APPARATUS AND METHOD OF OPERATION

Paul D. Evezich, Evanston, Colo., assignor to Nick Sekich, Jr., Longmont, Colo.

Filed Feb. 25, 1982, Ser. No. 352,445

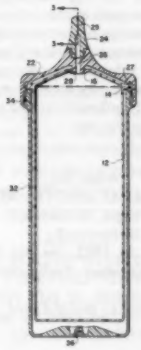
Int. Cl.³ B65D *35/28*

U.S. Cl. 222—83.5 **5 Claims**

1. Apparatus for dispensing flowable substances, the apparatus comprising:

a substantially closed pliable bladder structure adapted to contain a flowable substance, the bladder structure including an annular ridge defined around the perimeter thereof adjacent one end of the bladder structure and an opening defined in the end of the bladder structure;

a resilient outer container configured to enclose the bladder structure, the outer container including a removable cap portion and a bottom portion, the cap portion having defined therethrough a dispensing channel having a conical projection defined concentric with the inlet terminus of the dispensing channel, the dispensing channel communicating at one end with the exterior of the outer container and at the other end with the interior of the bladder structure in a sealing relationship with the conical projection engaging and sealing against the opening defined in the bladder structure, the body portion and cap portion further defining at the interface therebetween opposed surfaces adapted to engage opposite sides of the projecting annular ridge therebetween when the cap portion is secured to the body portion of the resilient container;



a first one-way check valve positioned in the channel and oriented to permit flow from the bladder structure; and

a second one-way check valve positioned in the outer surface of the outer container and positioned to permit flow from the exterior of the resilient container to the volume defined between the bladder structure and the resilient container.

4,469,251

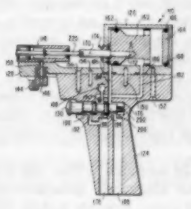
DETACHABLE MIXING CHAMBER FOR A FLUID DISPENSING APPARATUS

Charles R. Sperry, Westport, Conn., and Paul J. Bladyka, Springfield, Vt., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Sep. 2, 1981, Ser. No. 298,456

Int. Cl.³ B05B *15/02*

U.S. Cl. 222—135 **30 Claims**



9. A chamber adapted to receive a plurality of fluid components from respective sources thereof for forming a fluid to be discharged therefrom comprising, a core having a bore therein and a plurality of inlet openings arranged in communication with said bore for supplying said fluid components from said respective sources to said bore, and means for maintaining said core under a restraining force in both an axial and radial direc-

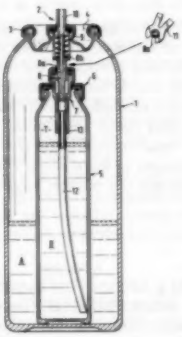
tion, wherein said means applies said restraining force at each end of said core.

20. A fluid dispensing apparatus, comprising first and second body portions, said first body portion including a mixing chamber having a first inlet through which a first fluid component is supplied to said mixing chamber and a second inlet through which a second fluid component is supplied to said mixing chamber; valving means movable within said mixing chamber between a first position in which said valving means permits fluid flow through said first and second inlets and a second position in which said valving means prohibits fluid flow through said first and second inlets; said second body portion including controlling means for controlling the movement of said valving means between said first and second positions; and connecting means for releaseably connecting said first and second body portions, whereby said mixing chamber and said valving means may be detached from said controlling means as a unit for replacement purposes.

4,469,252
TWO-COMPARTMENT PACKAGE

Gerhard Obrist, Kaiserangst, Switzerland, assignor to Aerosol Service AG, Möhlin, Switzerland

Filed Mar. 24, 1982, Ser. No. 361,418
Claims priority, application Switzerland, Apr. 10, 1981, 2400/81
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—135 17 Claims



3. A two-compartment package, comprising:

an outer aerosol can including an essentially dimensionally stable outer container with a cover member tightly fitted thereto and a dispensing valve fitted in said cover member;

said dispensing valve being an aerosol valve which comprises a valve housing and an actuating and dispensing tube which, for the purpose of opening the dispensing valve, can be displaced axially inwardly of the valve housing against a restoring force of an elastic element thereby opening an otherwise closed passage between the interior and the exterior of the outer container;

said outer container containing a first package component to be dispensed;

an inner aerosol can mounted within said outer aerosol can and including an essentially dimensionally stable inner container with a cover member tightly fitted thereto and a dispensing valve fitted in said cover member;

said dispensing valve of said inner container discharging into the interior of said outer container and comprising an aerosol valve including an actuating and dispensing tube;

said inner container containing a second package component to be dispensed and a propellant, whereby the internal pressure of the inner container is higher than the internal pressure of the outer container;

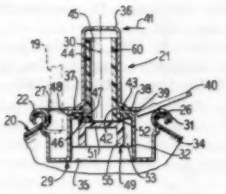
means kinematically coupling the actuating and dispensing tube of the dispensing valve of the outer container with the dispensing valve of the inner container in such a manner that upon opening of the dispensing valve of the outer container there is opened the dispensing valve of the inner container; and

means for fixedly retaining in its open position the dispensing valve of the inner container even when the dispensing valve of the outer container is closed again, thereby allowing the contents of the inner container to essentially entirely empty into the outer container and mix with the contents of the outer container.

4,469,253
RECLOSABLE VALVE WITH REMOVABLE HERMETIC EXTERNAL SEAL MEANS

Walter C. Beard, South St., Middlebury, Conn. 06762

Continuation-in-part of Ser. No. 452,953, Dec. 27, 1982,. This application Mar. 25, 1983, Ser. No. 476,782
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—153 16 Claims



1. A preassemblable fluid dispensing valve structure for dispensing the fill contents of a pressurizable container comprising:

a valve mounting cup having wall portions defining (a) a perimeter region which is peripherally sealingly securable to said pressurizable container, (b) a central valve receiving chamber with an upper aperture and longitudinally spaced lower aperture means defined therein, and (c) a cavity extending between said valve receiving chamber and said perimeter region and adapted for receipt thereinto of crimp forming means;

an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second receiving end extending through said upper aperture;

resilient valve seat means positioned generally in said valve receiving chamber;

a moveable valve means biasable against said valve seat means to close said valve structure;

said tubular nozzle means being moveable from a normally valve closed position relative to said valve mounting cup and having said second end thereof adapted for unseating said moveable valve means to open said valve structure when said tubular nozzle means is moved;

a gas-tight sealing member having a central region which is positioned over said tubular nozzle means and having peripheral portions positioned in adjacent relationship to said wall portions defining said valve receiving chamber, said peripheral portion being radially generally inwardly adjacent said cavity;

a gas-tight sealing means securing said peripheral portions to said adjacent wall portions;

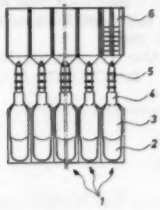
a frangible zone extending in a closed pathway generally adjacent to said valve receiving chamber and defined in at least one of said sealing member and said sealing means, said frangible zone being rupturable in response to applied localized external force, whereby said central region is removable from said tubular nozzle means, and whereby thereafter said contents are dispensable when said tubular nozzle means is so moved.

4,469,254

CONTAINER WITH A DOSING CHAMBER

Gerhard Hansen, Heerstrasse 130, 7166 Sulzbach-Laufen, Fed. Rep. of Germany

Filed Apr. 7, 1982, Ser. No. 366,164
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 8112834[U]
Int. Cl.³ B65D *37/00*; G01F *11/26*
U.S. Cl. 222—207 3 Claims



1. In an improved flexible plastic container for receiving a liquid and a gas and for selectively dispensing a measured quantity of the liquid, the container being of the type having a compressible body portion, and an elongated dosing chamber coupled at one end to the body portion and having at the other end an openable orifice through which the liquid can be dispensed, the improvement wherein

the inner diameter of the dosing chamber is selected as a function of the viscosity of the liquid contained therein such that the liquid remains in said chamber whenever said chamber is above the bottom of said body portion; and

said container is formed in one piece;

and wherein said container further comprises

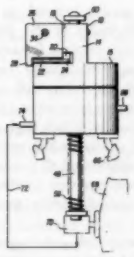
an intermediate portion coupling said one end of said chamber to said body portion, said intermediate portion having an abrupt stepwise increase in diameter from said chamber, the transition between said chamber and said intermediate portion being substantially unobstructed and having a relatively sharp corner such that, when said container is vertical, liquid flows from said intermediate portion into said body portion.

4,469,255

AUTOMATIC AND ADJUSTABLE VALVING MECHANISM

James J. Hill, Plantation, and Al Marven, Hollywood, both of Fla., assignors to Cook International, Inc., Palm Beach, Fla.

Filed Nov. 19, 1982, Ser. No. 443,161
Int. Cl.³ B05B *7/04*
U.S. Cl. 222—649 20 Claims



1. An automatic and adjustable valving mechanism for the timed release of pressurized fluid from an output valve of a pressurized fluid source, said valving mechanism comprising:

a housing having an axis;

actuating means on said housing and movable into contact with said output valve in a first position for releasing pressurized fluid from said fluid source;

first biasing means for biasing said actuating means into said first position;

fluid pressure means in said housing for moving said actuating means from a first position to a second position wherein said actuating means and said output valve are not in contact;

means for communicating said pressurized fluid released from said fluid source with fluid pressure means for actuating said fluid pressure means;

first adjustment means for adjusting the timing of said actuation of said fluid pressure means;

latch means on said housing for latching said actuating means in said second position;

first release means in said housing for releasing and discharging said pressurized fluid from said fluid pressure means;

second release means in said housing for releasing the latching of said actuating means by said latch means; and

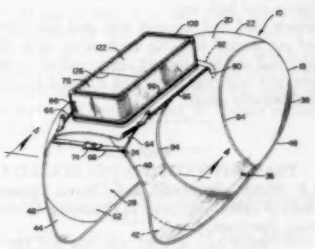
second adjustment means for adjusting the timing of actuation of said second release means.

4,469,256

COVER APPARATUS WITH DETACHABLE COMPARTMENTS

Jerry J. McEwen, 3536 Clay St., Denver, Colo. 80211

Filed Jul. 29, 1983, Ser. No. 518,389
Int. Cl.³ B62J *7/00*
U.S. Cl. 224—32 R 17 Claims



1. Cover apparatus adapted to mount on a vehicle frame element such as a motorcycle gas tank and the like to protect the exterior surface of said frame element, comprising:

a flexible shell figured to overlay the frame element and contoured to the shape of the frame element, said shell having a peripheral edge, a forward end oriented toward the front of the vehicle, a rearward end oriented toward the rear of the vehicle, and a plurality of pockets attached thereto, said pockets sized to receive portions of said frame element in mated relation, said shell having at least one slit formed therein with said slit intersecting said peripheral edge and having a pair of side edges, said side edges of the slit including connections means for connecting said side edges together along their common length to close said slit whereby said shell may be positioned over said frame element with said pockets receiving said frame element portions when said slit is open and whereby said shell is drawn taut around said frame element when said slit is closed.

4,469,257

SKI RACK DEVICE FOR PICKUP TRUCKS

Barry R. Parker, 908 E. Arques, Sunnyvale, Calif. 94086

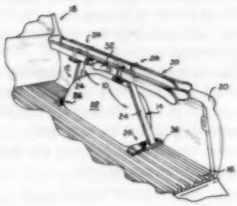
Filed Feb. 28, 1983, Ser. No. 470,215
Int. Cl.³ B65D *43/08*
U.S. Cl. 224—42.45 R 13 Claims

1. A ski rack device for a pickup truck having a bed and a

sidewall rising from a side edge of said bed, said ski rack device comprising:

(a) a first ski carrier assembly including a first elongated support post having a first upper end and a first lower end, first base means attached proximate said first lower end and adapted to engage said bed proximate said sidewall, and first ski attachment means attached proximate said first upper end; and

(b) a second ski carrier assembly spaced from said first ski carrier assembly and including a second elongated support post having a second upper end and a second lower end,



second base means attached proximate said second lower end and adapted to engage said bed proximate said sidewall, and second ski attachment means attached proximate said second upper end; and

(c) where said first support post and said second support post are angled away from said sidewall at an acute angle relative said bed; and

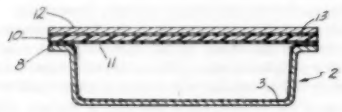
(d) where said first support post and said second support post are angled towards each other such that said first upper end and said second upper end are relatively proximate, and said first lower end and said second lower end are relatively distal.

4,469,258

TRAY WITH COMPOUND SEALED LID

Robert V. Wright, Burnsville, and Charles Csiszar, Bloomington, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Aug. 6, 1982, Ser. No. 406,102
Int. Cl.³ B65D *5/64*
U.S. Cl. 229—43 **4 Claims**



1. A package adapted for cooking a food product in a microwave or convection oven, said package comprising:

(a) a tray having a bottom wall, an upwardly extending side wall, and a peripheral flange extending outwardly from an upper edge of said side wall said tray being formed from paperboard coated with a resinous material selected from the group consisting of polyethylene, polyethylene terephthalate, polypropylene, acrylics and hot melts;

(b) a resinous membrane;

(c) a layer of a first adhesive on an inner surface of said resinous membrane, said first adhesive binding said resinous membrane to said tray flange to seal the interior of said tray;

(d) a paperboard lid;

(e) a layer of a second adhesive on an inner surface of said paperboard lid, said second adhesive binding said paperboard lid to said resinous membrane;

(f) the bond produced by said second adhesive being weaker than the bond produced by said first adhesive whereby said paperboard lid can be peeled off of said resinous membrane while said resinous membrane remains in sealing engagement with said tray flange; and

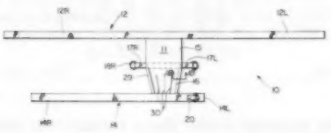
(g) the bond produced by said first adhesive being sufficiently weak that said resinous membrane can be peeled off of said tray flange to open the package without damaging the resinous coating on the tray flange.

4,469,259

BABY CARRIER

Claudia A. Krich, and Keith Brinton, both of 203 Oak Ave., Woodland, Calif. 95695

Filed Mar. 11, 1983, Ser. No. 474,480
Int. Cl.³ A47D *13/02*
U.S. Cl. 224—160 **9 Claims**



1. A baby carrier for carrying a baby against the front of the wearer's body, comprising a pouch panel, shoulder straps and a waist strap:

said pouch panel formed of flexible material and having a generally flat rectangular upper portion and an inwardly tapering lower portion, the inward taper of the lower portion continuing from its juncture with the upper portion to its intersection with said waist strap adjacent the end of said lower portion, the respective ends of the pouch panel being coterminous with the ends of the upper and lower portions, the generally rectangular flat upper portion terminating at a height which, in use, is generally midway between the wearer's waist and neck, said generally flat rectangular portion being short enough in width to form an opening between itself and the wearer's body for passage of a baby's arms out of the sides of the upper portion, between the side edges of the upper portion and the front of the wearer, the continuously inwardly tapering lower portion being short enough in width to allow a baby's legs to extend out and over the side edges thereof, whether the baby is facing inward toward the wearer or outward away from the wearer,

shoulder straps connected to the upper end of the upper portion and of sufficient length to extend up and over the shoulders of the wearer, criss-cross on the wearer's back and reach first connecting means associated with the respective opposite sides of the pouch panel,

said first connecting means located on the side edges of the pouch panel substantially at the juncture of the upper portion and the lower portion for connecting each shoulder strap which has criss-crossed over the wearer's back to the opposite side of the pouch panel, each said first connecting means being located at a height above said end of said lower portion which is high enough to allow the baby's legs to pass out over the respective side edges of the pouch panel below said first connecting means, and also low enough to assure that a substantial portion of the baby's weight is spread across the upper back of the wearer,

the lower end of the pouch panel connected to the waist strap, such that said waist strap extends outwardly from the respective side edges of said lower portion, said waist strap including second connecting means for connecting opposite ends of the waist strap to each other with the straps fitting snugly entirely around the wearer's body independently of the shoulder straps and the first connecting means, such that the continuously tapering lower

portion of the pouch panel extends outwardly from the wearer's body to form a lower support for the baby.

4,469,260

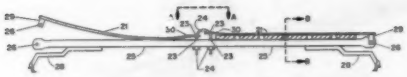
CONVERSION OF ROOF TOP SURFBOARD CARRIERS TO IMPROVED SKI CARRIERS

Dennis M. Delahanty, 219 Forest Ave., Pacific Grove, Calif. 93950

Continuation-in-part of Ser. No. 239,384, Mar. 2, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 406,083

Int. Cl.³ B60R *9/04, 9/12*

U.S. Cl. 224—315 **3 Claims**



1. A carrier for placement on the roof of an automobile, said carrier comprising:

a tubular body for supporting at least a portion of an article to be carried on said carrier, said body having its ends flattened to present at each end a flange-like projection extending outwardly in the longitudinal direction of said body and being substantially the same height as said body, each projection having an aperture therethrough, said body having means for securement thereof at respective sides of the automobile, said body having a substantially U-shaped bolt for removably securing at generally the middle of the length of said tube,

a resilient metal bar strip for releasable pivotable attachment to said body whereby skis or the like may be clamped between said body and said strip, said strip being generally less than half the length of said body and having an aperture at one end for passage therethrough of a leg of said U-bolt, said strip at the opposite end thereof having two generally parallel, spaced flange plates generally perpendicular to said strip and extending downwardly for placement of one of said projections therebetween when said strip is clamped to said body, said flange plates having apertures therethrough for alignment with said aperture through said projection for passage of a pin means for securing said projection and said flange plates together thereby clamping said strip to said body, said strip in a relaxed, unclamped condition being curved such that said strip between the ends thereof bows in the same downward direction as said flange plates.

3. A resilient metal bar strip for releasable pivotable securement to a car top carrier of the type having a tubular body for traversing the width of the roof of an automobile, said strip comprising:

a pair of generally parallel, spaced flange plates extending generally perpendicular to said strip at one end thereof, said flange plates having an aperture therethrough for passage of a locking pin means for securing an end of the car top carrier tubular body between the flange plates,

said strip having a length generally less than half the length of the car top carrier tubular body, said strip having an aperture through its other end opposite said one end for attachment to near the center of the car top carrier tubular body,

said strip being curved in a relaxed state with the bow of said carrier curve being concave when viewed from the side of said strip said flange plates extend, the major portion of said strip being defined within said curve except for a minor portion at said other end including the aperture therein, said curve and the attachment of said strip through said aperture at said other end to the car top carrier tubular body allowing said strip to pivot and clamp skis or the like between the car top carrier tubular body and said strip with said strip being substantially in a straight plane except for said minor portion when said flange plates are secured to the car top tubular body.

4,469,261

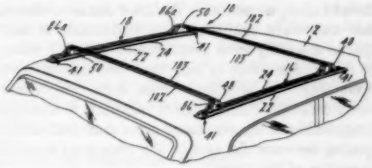
ARTICLE CARRIER WITH ADJUSTABLY POSITIONABLE BRACKET

Craig A. Stapleton, Port Huron; William Rasor, Marysville, and Gary Cronce, Port Huron, all of Mich., assignors to Masco Corporation, Taylor, Mich.

Filed May 6, 1982, Ser. No. 375,401

Int. Cl.³ B60R *7/00*

U.S. Cl. 224—321 **10 Claims**



1. An article carrier for mounting on a surface of a motor vehicle, said article carrier comprising at least one track fixedly secured to said surface, a longitudinal rib extending from said track, a bracket slidably secured to said track, a rail being fastened to said bracket such as to be supported above said surface, a resilient clamping plate disposed adjacent to said rib, a pin fastened to said plate, a toggle arm pivotally fastened to the end of said pin furthest from said plate, and a camming extension on a surface of said toggle arm in contact with a surface of said bracket whereby as said toggle arm is pivoted said camming extension causes said toggle arm to draw said pin and urge said plate against said rib thereby clamping said rib between said plate and said bracket to fixedly secure said bracket to said rib.

4,469,262

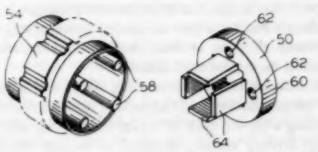
PAPER FEED TRACTOR WITH COMPENSATING DRIVE PULLEY

Karl G. Seitz, Goshen, Conn., assignor to Data Motion, Inc., Torrington, Conn.

Filed Aug. 11, 1982, Ser. No. 407,104

Int. Cl.³ B65H *17/40*

U.S. Cl. 226—74 **16 Claims**



1. In a drive tractor for web material adapted to be mounted on a printer or the like having spaced parallel extending drive and support shafts, the combination comprising:

A. a chassis having a pair of spaced transversely extending apertures therein, at least one of said apertures being adjacent an end thereof;

B. a flexible endless belt extending about said chassis generally perpendicularly to the axes of said apertures, said belt defining a closed path of travel thereabout and having an outer driving surface adapted to engage the associated web material and an inner driven surface;

C. a pulley rotatably mounted in said at least one chassis aperture and in engagement with said driven surface of said belt, said pulley having an aperture therethrough for receiving the associated drive shaft to effect rotation of

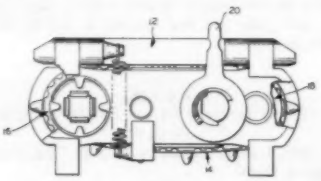
said pulley and thereby said belt, said pulley comprising (i) a first element having an end wall, a generally cylindrical sidewall having its outer surface engaging said driven surface of said belt, and a multiplicity of axially extending, resiliently deflectable posts on said end wall and spaced inwardly from said sidewall, and (ii) a second element having an end wall with means thereon seating said posts and effecting assembly therewith, said end walls of said elements having aligned apertures therethrough for passage of the associated drive shaft, and said second element having resiliently deflectable means thereon providing a passage portion of smaller cross section than said apertures of said end walls and of the shaft to be received therein along a portion of the axial distance intermediate said end walls, said resiliently deflectable means being spaced inwardly from said sidewall and said multiplicity of deflectable posts of said first elements, whereby the drive shaft may produce resilient deflection of said resiliently deflectable means and of said posts to accommodate irregularities in the associated drive shaft and variations in spacing between the axes of the associated shafts during operation of the tractor.

4,469,263

PAPER FEED TRACTOR WITH COMPENSATING DRIVE PULLEY

Alan F. Seitz, New Hartford, Conn., assignor to Data Motion, Inc., Torrington, Conn.

Filed Aug. 11, 1982, Ser. No. 407,105
Int. Cl.³ B65H *17/40*; G03B *1/30*
U.S. Cl. 226—74 **21 Claims**



1. In a drive tractor for web material adapted to be mounted on a printer or the like having spaced parallel extending drive and support shafts, the combination comprising:

A. a chassis having a pair of spaced transversely extending apertures therein, at least one of said apertures being adjacent an end of said chassis;

B. a flexible endless belt extending about said chassis generally perpendicularly to the axes of said apertures, said belt defining a closed path of travel thereabout and having an outer driving surface adapted to engage the associated web material and an inner driven surface;

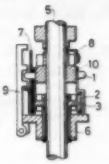
C. a pulley rotatably mounted in said at least one said chassis aperture and in engagement with said driven surface of said belt, said pulley having an aperture therethrough for receiving the associated drive shaft to effect rotation of said pulley and thereby said belt, said pulley having resiliently deflectable means for accommodating irregularities in the associated drive shaft and variations in spacing between the axes of the associated shafts during operation of the tractor, said deflectable means extending axially within said pulley and defining at least a portion of said shaft receiving aperture and providing a cross section therefor over at least a portion of the axial length thereof less than the cross section of the shaft to be received therein whereby the associated drive shaft may produce resilient deflection of said resiliently deflectable means.

4,469,264

TRACTOR APPARATUS FOR FEEDING PAPER

Teruo Suzuki; Tsuneki Kobayashi, and Masao Miyasaka, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,825
Claims priority, application Japan, Mar. 12, 1982, 57-39674
Int. Cl.³ G03B *1/30*; B65H *17/34*
U.S. Cl. 226—74 **5 Claims**



1. An apparatus for feeding a paper (11) having holes (12), comprising:

a pair of pulley shafts (5);

at least two main pulleys (3, 4) mounted on said pair of pulley shafts;

an endless belt (2) disposed over said two main pulleys;

a plurality of pins (1) mounted on said endless belt and positioned to a side of an outer periphery of said endless belt, said pins fitting into said holes in said paper to feed said paper as said endless belt is driven by said pulleys; and

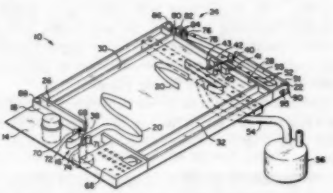
an auxiliary pulley (10) rotatably mounted on one of said shafts, said auxiliary pulley confronting and supporting bottoms of said pins.

4,469,265

TAPE HANDLING DEVICE

Charles D. Manquen, 1694 Calle Zocalo, Thousand Oaks, Calif. 91360

Filed Dec. 17, 1982, Ser. No. 436,997
Int. Cl.³ B65H *17/32*
U.S. Cl. 226—97 **14 Claims**



3. A tape handling device for transport and storage of an endless tape, comprising;

a tape storage bin disposed in a horizontal plane and having a central storage area in which the majority of an endless tape is stored in serpentine folds, said bin having a tape entrance port through which tape enters said bin and a tape exit port through which tape leaves said bin;

a tape drive means for driving said tape outside said bin between said exit port and said entrance port;

a vacuum means and a vacuum plenum; and

a communicating means between said vacuum plenum and said storage bin such that air is drawn into said bin through said entrance and exit ports and out of said bin through said communicating means, said air flow acting to draw said tape into said bin through said entrance port;

said bin being of varying depth along the tape path through the bin, the depth being less in entrance and exit zones adjacent said entrance and exit ports than in said central

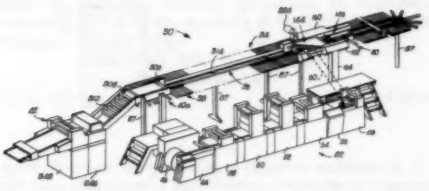
storage area in which said serpentine folds of tape are formed into a tape storage pack.

4,469,266

FEED AND LOCK MECHANISM FOR MULTIPLE BAR DRAPED WEB COLLATOR AND METHOD

John B. Howard, and Dean E. Gladow, both of Emporia, Kans., assignors to Didde Graphic Systems Corporation, Emporia, Kans.

Filed May 10, 1982, Ser. No. 376,545
Int. Cl.³ B65H 17/42
U.S. Cl. 226—106 36 Claims



1. A web handling conveyor system, comprising:
an elongated track;
a plurality of web supports each including an elongated web-supporting element, and a web-engaging keeper, and means mounting said keeper for shifting movement thereof relative to the associated element;
means mounting said supports for movement along said track;
means for moving said web supports along said track;
a web feeding station, comprising—
means for draping a section of said web over each respective element as said web supports are moved therepast; and
means for shifting the keeper of each respective element away from the associated element during draping of said web section thereover, and for shifting of the keeper into engagement with said web section after at least a portion of the draping thereof is completed, in order to hold the draped web section in place,
said keeper shifting means comprising structure for selectively engaging each respective keeper as the web support associated therewith passes said web feeding station, for shifting the respective keeper away from the associated element, and for maintaining the keeper in its shifted away position during at least a portion of the draping of said web section,
said means for shifting said keeper into engagement with the web section also comprising means biasing the keeper to a web-engaging position adjacent said associated element.

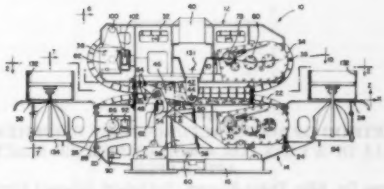
4,469,267

DRAW-OFF AND HOLD-BACK CABLE TENSION MACHINE

John M. Franchuk, and James P. Blanchet, both of Snohomish County, Wash., assignors to Western Gear Corporation, Everett, Wash.

Filed Jan. 15, 1982, Ser. No. 339,298
Int. Cl.³ B65H 51/10
U.S. Cl. 226—172 27 Claims

1. A cable tension machine to pay out or to haul in cable, comprising:
(a) upper and lower track assemblies positioned atop one another and capable of applying a tensioning force to the cable which passes between the tracks, each track assembly having;
(i) a frame;
(ii) an endless track belt capable of moving around the frame to haul in or to pay out cable;
(iii) a track belt suspension semirigidly attached to the frame and capable of accepting minor variations in cable dimensions, wherein the suspension of one track assembly is aligned with the corresponding suspension of the other track assembly to define a cable contact surface between the track belts of the two assemblies; and
(iv) means for driving the track belt mounted to each frame;
(b) a housing to hold both track assemblies in spaced relationship (1) allowing vertical raising of the upper track assembly relative to the lower track assembly through a pivotable lift point and (2) allowing cable to be threaded between the track belts from one side of the machine; and
(c) a loading device acting on the upper track assembly through the lift point, to allow compensation between the track assemblies for gross variations in cable dimensions and to allow input of the desired tensioning force upon the cable,
wherein
each track belt suspension includes:
an elongated suspension unit; and



means connecting the suspension unit to the frame allowing floating of the suspension unit relative to the frame while allowing transfer of torsional and longitudinal forces on the suspension unit into the frame;
wherein
each suspension unit includes:
a plurality of roller pairs sets, each roller set having spaced rollers on shafts, the rollers held apart a predetermined distance by bushing roller supports attached to the shafts on both ends of the rollers;
rigid connecting links for rigidly connecting adjacent shafts between neighboring roller sets, forming an elongated assembly having two ends; and
means for positioning each assembly relative to the frame so that the assembly floats and provides the ability of the machine to accept minor variations in cable dimensions between the tracks assemblies; and
wherein the suspension unit further includes an arcuate end roller arm means attached to each end of the assembly for articulating with respect to the assembly while imparting an anticipatory movement and load to the first roller of the assembly, for preparing the assembly to receive a cable of varied cable dimension.

4,469,268

PNEUMATIC FEED SYSTEM FOR AXIAL LEAD COMPONENTS

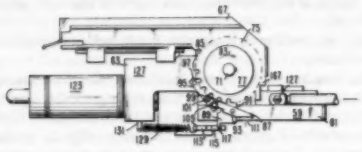
Carl C. Roecks, Palos Verdes Est., Calif., assignor to Amistar Corporation, Torrance, Calif.

Filed Feb. 17, 1982, Ser. No. 349,634
Int. Cl.³ H05R 3/32; B25G 51/02
U.S. Cl. 227—76 9 Claims

1. An axial lead electronic component transport system, the system including:
an axial lead electronic component input station for accepting said electronic component;

an axial lead electronic component output station for receiving said electronic component from said input station;

conduit structure communicating with both said input and output stations, said input station including structure which cuts the leads of said component to a desired length



and conveys said component to said conduit structure in a single operation; and

pneumatic means operatively coupled-to said input station and to said condit structure for forcing said electronic component from said input station to said output station.

4,469,269

METHOD OF MANUFACTURING THE PERIPHERAL WALL OF A TANK FOR AN OIL-IMMERSED ELECTRIC APPARATUS

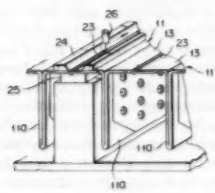
Tatsuo Ito, Mie; Tadao Murata, Yokkaichi; Miyoshi Horiuchi, Suzuka, and Masahiro Goto, Mie, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1982, Ser. No. 437,008

Claims priority, application Japan, Oct. 31, 1981, 56-175429

Int. Cl.³ B23K *31/00, 31/06*

U.S. Cl. 228—173 C **8 Claims**



1. A method of manufacturing the peripheral wall of a tank for an oil-immersed electric apparatus which comprises manufacturing a panel unit through the steps of:

fabricating a panel by pressing a thin steel sheet to form an upward extending flange along both edges of the panel and provide a plurality of reinforcement depressions concaved toward the backside of the flat portion of said panel;

folding the panel into two parts with the surface of the panel kept outside along the central line extending between both edges of the panel to fabricate a hollow fin;

joining both sides of the folded fin by spot welding the reinforcement depressions; and

welding together the closely facing edges of both sides of the fin,

and constructing the peripheral wall of the tank by joining together a plurality of panel units fabricated through the above-mentioned steps by welding the flanges of said panel units.

4,469,270

ARTICLE OF PARTIALLY CRYSTALLINE ORGANIC RESIN AND METHOD AND APPARATUS FOR MAKING SAME

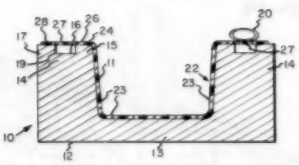
Robert J. Gartland, Youngstown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 244,836, Mar. 18, 1981, Pat. No. 4,374,800.

This application Aug. 20, 1982, Ser. No. 409,769

Int. Cl.³ B65D *1/00;* **B29C** *17/04*

U.S. Cl. 229—2.5 R **3 Claims**



1. A container prepared by a process for thermoforming a thermally crystallizable polyalkylene terephthalate resin sheet which is substantially unoriented and has an initial thermally induced crystallinity of less than 10% into a container having a perimetric flange surrounding a body portion comprising:

(a) rapidly preheating the sheet so as not to increase the average thermally induced crystallinity to more than 10% and very shortly thereafter,

(b) contacting and conforming the sheet while preheated with a heated mold having a body-forming portion which is at a temperature in the range of 140° to 190° C. and a flange-forming portion surrounding the body-forming portion,

(c) simultaneously with step (b) rapidly reducing the temperature of a part of that portion of said sheet which overlies the flange-forming portion of said mold to reduce the rate of thermally induced crystallization thereof,

(d) maintaining contact of the conformed sheet with the heated mold until an average crystallinity of at least about 20% is achieved in that portion of the sheet which contacts the body-forming portion of the mold while maintaining said part of that portion of the sheet which overlies the flange-forming portion of the mold at a lower temperature; and

(e) removing the thermoformed sheet from the mold.

4,469,271

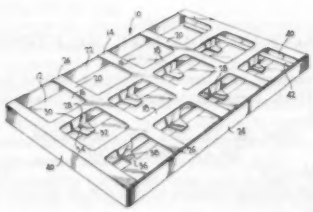
MULTI-POCKET TRAY

Francis V. Kulig, Morris, Ill., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Sep. 30, 1982, Ser. No. 428,603

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—28 R **6 Claims**



1. A multi-pocket carton comprising a base panel, a face panel overlying and spaced above said base panel, said face panel having side edges connected to said base panel by upstanding longitudinal walls, said carton having a plurality of

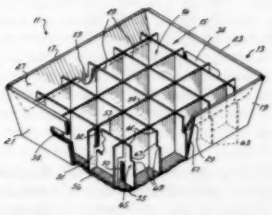
pockets opening through said face panel and defined by cut-outs formed in said face panel and arranged in longitudinal columns separated by longitudinal straps, at least certain of said straps being connected to said base panel by a strut terminating in a glue tab overlying and adhesively secured to said base panel, said base panel having adhesively coated areas underlying said glue tabs with said adhesively coated areas being longitudinally aligned and separated by longitudinally aligned and spaced cut-outs in said base panel.

4,469,272

FOLDABLE CONTAINER

Michael B. McFadden, Holland, and Randal M. Honeysett, Plainwell, both of Mich., assignors to W. J. Bradford Paper Company, Holland, Mich.

Filed Oct. 6, 1982, Ser. No. 432,981
Int. Cl.³ B65D 5/48
U.S. Cl. 229—28 R **10 Claims**



1. A foldable container comprising:

an enclosure including a pair of side walls and a pair of end walls foldably connected to a bottom section, said side walls and end walls being adapted to fold in an upright, interconnected position relative to said bottom section to form said enclosure with an open interior, each of said side walls including an upper end formed with a flap having a bottom edge, said flaps being foldable inwardly into said open interior and downwardly with said bottom edge facing toward said bottom section;

an insert disposed in said open interior of said enclosure, said insert having a plurality of spaced, first partitions disposed generally perpendicular to said side walls of said enclosure, and a plurality of spaced, second partitions disposed generally perpendicular to said end walls, said first and second partitions intersecting and being connected together to form a plurality of compartments, each of said first partitions being a planar, generally rectangular-shaped section of sheet material having an upper edge, lower edge and end sections forming a pair of upper corners and a pair of lower corners, said upper corners of each of said first partitions being formed with an L-shaped notch adapted to receive said side wall flaps, said flaps of each of said side walls being folded downwardly so that said bottom edge thereof engages said L-shaped notch of said first partitions on both sides of said enclosure to secure said insert within said enclosure.

4,469,273

SELF-UNLOCKING CONTAINER CLOSURE

Leroy D. Smith, Corning, N.Y., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 2, 1983, Ser. No. 500,476
Int. Cl.³ B65D 5/68
U.S. Cl. 229—43 **4 Claims**

1. A blank for a container closure comprising

a central panel,

side panels connected to opposite sides of said central panels by first score lines,

locking panels connected to each side of each side panel by second score lines,

outer end panels connected to opposite ends of said central panel by third score lines,

said second score lines being inset from said third score lines a distance substantially equal to the thickness of said locking panels,

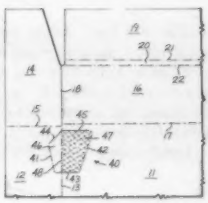
connecting panels connected to the outer ends of said outer end panels by fourth score lines,

inner end panels connected to the outer ends of said connecting panels by fifth score lines,

said connecting panels having a width substantially equal to the thickness of said locking panels,

said outer end panel, said connecting panel and said inner end panel being wrapped around said locking panels when said side and end walls are held upright with respect to said central panel,

means for temporarily locking said end walls in wrapped position around said locking panels, said locking means being formed in and hingedly joined to said central and said side panels and having a free edge adjacent to a plane passing through said third score line, said plane being perpendicular to said central panel, said adjacent free edge



having at least one first point spaced from said plane a distance such that said first point will bear against an inner face of said inner end panel when said end panels are wrapped around said locking panels,

said temporary locking means being formed in said central and side panels by a pair of slits extending transversely of said first score lines, and hinged to said central and side panels by sixth and seventh score lines,

said sixth score line being in said side panel and said seventh score line being in said central panel,

any second point on said seventh score line being a greater perpendicular distance from said first score line than a corresponding third point on said sixth score line,

said temporary locking means being divided into a first locking means section in said side panel and a second locking means section in said central panel by an eighth score line, said eighth score line being aligned with said first score line,

said sixth, seventh and eighth score lines if extended meeting in a common fourth point,

said locking means being moveable back into the planes of the panels from which it is formed when said closure is telescoped on a container.

4,469,274

ELECTRONIC THERMOSTAT WITH REPETITIVE OPERATION CYCLE

Michael R. Levine, 2900 Heatherway, Ann Arbor, Mich. 48104

Division of Ser. No. 153,343, May 27, 1980, Pat. No. 4,335,847.
This application Feb. 19, 1982, Ser. No. 350,522
Int. Cl.³ F23N 5/20
U.S. Cl. 236—46 R **6 Claims**

1. An electronic controller comprising:

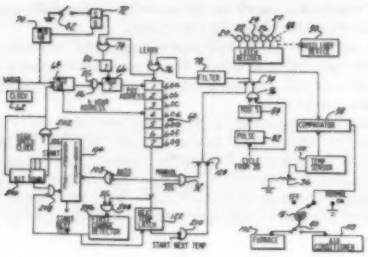
a clock operative to generate electrical signals representative of times within a repetitive time cycle and a repetitive subcycle which is a divisor of the cycle;

a memory;

input means, responsive to said clock, for entering set points into the memory;

means, controlled by the clock, for reading set points out of the memory;

means, controlled by the operator, for placing the system in a first mode wherein an inputted set point is stored in memory or in a second mode wherein a set point stored in the memory is recalled each time cycle; and



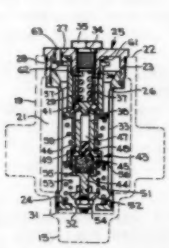
means, for controlling the input means before the clock reaches a predetermined state, to store an inputted set point in a plurality of memory locations for recall at the same time during each clock subcycle, and for controlling the input means to store an inputted set point in a single memory location, after the clock reachs said predetermined state, for recall once in a plurality of clock subcycles.

4,469,275

THERMOSTATIC DEVICE WITH FAIL-SAFE CAPABILITY

Dennis W. DeSalve, Findlay, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Jan. 17, 1983, Ser. No. 458,358
Int. Cl.³ G05D *23/12*
U.S. Cl. 236—93 A **8 Claims**



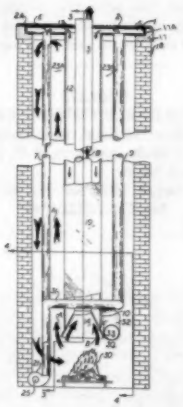
4. A temperature responsive control device according to claim 4, wherein said thermally sensitive part has a bi-metal construction and is positioned between an end of said sleeve and a wall of said body and has one configuration at fluid temperature values below said selectively high value and another configuration at fluid temperatures at and above said selectively high values.

4,469,276

HEAT RECOVERY APPARATUS

Al Marcum, 3012 Cedar Point Rd., Crestwood, Ky. 40014

Filed Sep. 30, 1982, Ser. No. 429,211
Int. Cl.³ F24B *1/18*
U.S. Cl. 237—51 **6 Claims**



1. A heat recovery apparatus for use in a fireplace having a firebox with an upwardly directed flue of selected peripheral cross section defined by cooperative sidewalls and communicates with said firebox and having an outlet, including:

a. first plenum chamber means to be located adjacent the top of the flue across a portion of said outlet and having a smoke conduit receiving aperture therethrough;

b. at least one first conduit means of selected cross section having a first end communicating with said first plenum chamber means and adapted to extend downwardly therefrom within said flue to said firebox and terminating in a second end.

c. second conduit means of selected mean diameter having a first end communicating with said first plenum means and extending downwardly therefrom through a portion of the length of said flue in spaced generally parallel relation from said first conduit in generally aligned relation with said smoke conduit receiving aperture of said first plenum where said second conduit includes first air flow opening means adjacent the bottom thereof and where combustion gasses are exposed to the outside of the second conduit;

d. smoke conduit means having a mean diameter less than the mean diameter of said second conduit and adapted to be received within said second conduit whereby a second annular plenum means is defined between said smoke conduit and said second conduit and wherein said smoke conduit extends through said smoke conduit receiving aperture of said first plenum with an outlet above said first plenum and an inlet in communicative relation with said firebox and where said second annular plenum and said first conduit are in communicative relation through said first plenum;

e. blower means to move air to be heated through said first conduit, said first plenum means and said second plenum means to a space to be heated; and

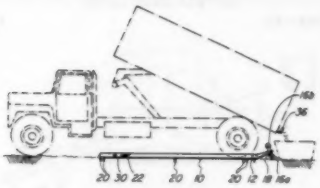
f. wherein said second conduit is located in spaced relation from a side wall of said flue whereby a combustion gas plenum chamber is defined by a portion of the side walls of said flue and a portion of said conduit, and said first conduit is located within said combustion gas plenum chamber and said combustion gas plenum chamber communicates with said firebox so combustion products from said firebox flow by thermo syphon effect along the surface of said first conduit and along the outside walls of said first and second plenums.

4,469,277

BACK-UP GUIDE FOR TRUCKS OR TRAILERS

Don E. Howes, 6095 W. Saanich Rd., Victoria, B.C., Canada

Filed May 16, 1983, Ser. No. 495,022
Claims priority, application Canada, Apr. 14, 1983, 425903
Int. Cl.³ E01B 23/00
U.S. Cl. 238—10 R 10 Claims



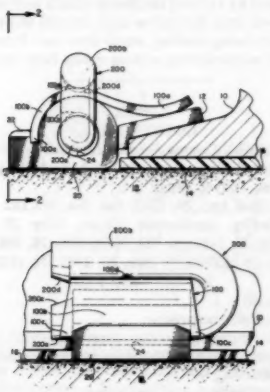
1. An easily transportable back-up guide for locating the rear end of a truck or trailer both longitudinally and laterally, comprising an elongated guide member suitable for guiding the side of a wheel and a wheel stop member fixed at about a right angle to a rear end portion of the guide member, said guide member and stop member being arranged in open L-shaped configuration so that the guide is mountable on a truck or trailer body with the guide member extending along a portion of the side of said body which body is longer than the guide member and with the stop member adjacent an end of said body, at least one of said members having means for gripping the ground and preventing sliding when the guide is in use, said guide being provided with wheel means or the like at one end thereof which afford relatively easy movement of the guide when the other end is raised so that said gripping means clear the ground.

4,469,278

RAIL FASTENING SYSTEM FOR USE WITH SHOULDER FITTED CONCRETE TIES

Daniel L. Jerman, 4 Beacon Hill Dr., Phoenixville, Pa. 19460

Filed Aug. 3, 1982, Ser. No. 404,857
Int. Cl.³ E01B 9/30
U.S. Cl. 238—349 14 Claims



1. Hold down apparatus for holding railway rail assembly to concrete ties fitted with Pandrol-like shoulders, said shoulders comprising an upstanding portion having rail-parallel bore defined therethrough, having a curved upper surface over said bore, and having a ledge adjacent to said bore on the side reote from said rail, said apparatus comprising:

(a) a rail clip engaging said upper surface of said upstanding portion and a portion of said rail assembly, and

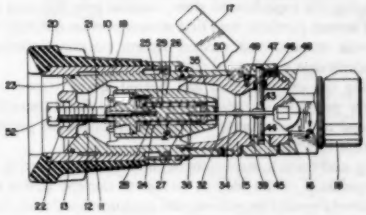
(b) locking pin means for connecting said rail clip means to said shoulder and for biasing a portion of said clip toward said rail assembly to apply hold down pressure to said rail assembly said locking pin means comprising a generally U-shaped locking pin, one of the legs of said locking pin being configured for insertion into said bore of said shoulder, said locking pin further comprising clip retaining means at least for retaining the lateral position of said clip relative to said surface of said shoulder, said clip retaining means further comprising a bevelled flange defined on the clip engaging leg of said locking clip.

4,469,279

CONSTANT PRESSURE NOZZLE WITH SELECTIVE VOLUME LIMIT CONTROL

George G. Allenbaugh, Jr., Wadsworth, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio

Filed Aug. 30, 1982, Ser. No. 412,574
Int. Cl.³ B05B 1/32
U.S. Cl. 239—453 16 Claims



1. In a constant pressure discharge nozzle having an automatic pressure-responsive regulating mechanism for discharge flow, the combination of:

a nozzle body having a fluid discharge opening,

a pressure-responsive baffle head assembly movably mounted in said body for adjustably controlling the size of said discharge opening in response to fluid pressure in said body,

said baffle head assembly including a baffle stem longitudinally movable in said body between a minimum flow position and a maximum flow position of said baffle head assembly,

and adjustable stop means selectively engageable with said baffle head assembly during fluid flow for limiting pressure-responsive opening movement of said baffle head assembly to at least one intermediate flow discharge position between said minimum and maximum positions,

whereby said baffle head assembly is retained against pressure-responsive opening movement from said selected intermediate position, but is free to move pressure-responsively between said selected intermediate position and said minimum flow position.

4,469,280

METHOD FOR HEATING AGGLOMERATING SLURRIES

Lester G. Massey, Moreland Hills, Ohio; Robert I. Brabets, Lombard, Ill.; David A. George, Park Forest, Ill., and William A. Abel, Joliet, Ill., assignors to CNG Research Company, Cleveland, Ohio

Division of Ser. No. 127,736, Mar. 6, 1980, Pat. No. 4,369,351.
This application Jul. 2, 1982, Ser. No. 394,695
Int. Cl.³ B02C 19/12
U.S. Cl. 241—1 7 Claims

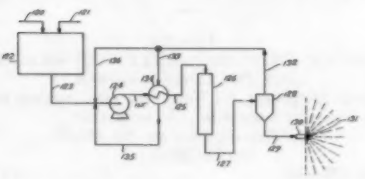
1. A method for conversion of hydrocarbonaceous solid particles to smaller particles, said hydrocarbonaceous particles

characterized by the tendency to agglomerate at high temperatures, the method comprising the following steps:

mixing the hydrocarbonaceous particles with a fluid to provide a feed slurry;

diluting the feed slurry with a relatively cooled recycle stream to provide a diluted slurry, the recycle stream comprising a fluid containing a lesser amount of hydrocarbonaceous particles than either the feed slurry or the diluted slurry;

heating and pressurizing the diluted slurry to conditions sufficient to provide a first, superheated slurry stream;



separating the superheated slurry stream into first and second stream portions, said first stream portion defining said recycle stream, said second stream portion defining a concentrated and heated slurry stream;

exposing the concentrated and heated slurry stream to a lower pressure sufficient to cause the fluid thereof to expand and comminute the hydrocarbonaceous particles thereof to a smaller size;

passing said recycle stream through means for lowering the temperature of the recycle stream to thereby define said relatively cooled recycle stream agglomerate during heating thereof.

4,469,281

METHOD AND APPARATUS FOR DISINTEGRATION OF SOLIDIFIED BATH MATERIAL ON THE RESIDUES OF PREBAKED ANODES FROM ALUMINIUM ELECTROLYSIS CELLS

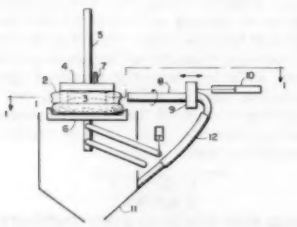
Finn Rød, Høvik, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

Filed Sep. 14, 1982, Ser. No. 418,170

Claims priority, application Norway, Oct. 6, 1981, 813376

Int. Cl.³ B02C *19/00*

U.S. Cl. 241—1 **8 Claims**



1. A method for the disintegration of solidified bath layers on the residues of prebaked anodes from aluminum electrolysis cells, wherein the prebaked anodes each comprise a calcinated carbon block connected to a current-providing rod through one or more cylindrical steel nipples, said method comprising partially removing the bath material from the surface of the anode by core drilling portions of said bath material and simultaneously initiating disintegration of the remaining bath material of the bath layer.

4,469,282

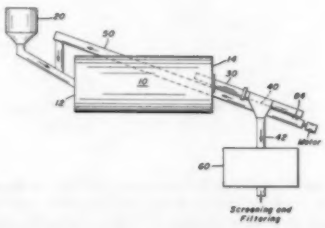
METAL FLAKE PRODUCTION

A. David Booz, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 863,217, Dec. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 730,181, Oct. 6, 1976, Pat. No. 4,065,060. This application May 11, 1983, Ser. No. 492,549

Int. Cl.³ B02C *23/18*

U.S. Cl. 241—16 **14 Claims**



1. A method of forming aluminum flake having a predetermined size from aluminum particles in a ball mill wherein backmixing is minimized, said method comprising:

(a) charging the ball mill with milling media to be recirculated at a predetermined constant flow rate and with feed materials at a predetermined flow rate to provide a mix therein comprising approximately 30 to 70 wt.% aluminum particles, the remainder liquid;

(b) operating the mill to form said aluminum flake;

(c) removing the aluminum flake, liquid and milling media from the mill at a rate commensurate with said charging thereto;

(d) separating the milling media from the liquid and aluminum flake by addition of solvent to provide a mix having a aluminum flake content in the range of 5 to 20 wt.%;

(e) recirculating the milling media to the mill; and

(f) maintaining the predetermined flow rates at which said feed materials and the recirculating milling media are charged to the mill to produce aluminum flake having a predetermined size and to minimize backmixing in the mill, said predetermined milling media flow rate being maintained by varying the rate at which said milling media is removed from the mill so as to correct any deviations in the recirculating milling media flow rate from the predetermined recirculating milling media flow rate.

4,469,283

COFFEE MILL

Yoshihiro Noguchi, Gunma Seisakusho, and Toshio Nakajima, Ojima, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,102

Claims priority, application Japan, May 29, 1981, 56-78837[U]; May 29, 1981, 56-78839[U]; May 29, 1981, 56-82011; Jul. 31, 1981, 56-113906[U]; Dec. 23, 1981, 56-192152[U]

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—48 **58 Claims**

1. A coffee mill comprising:

a mill casing defining a cutter receiving space and a coffee bean waste component catching spaced formed above said cutter receiving space;

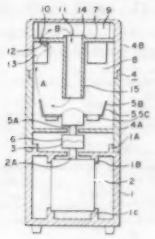
a pulverizing cutter receiving space;

communication means for communicating said cutter recieving space with said waste component catching space;

air flow producing means in said mill casing for producing air flow passing between said cutter receiving space and said waste component catching space, through said communication means;

a substantially solid partition wall in said mill casing for

defining said cutter receiving space together with said casing and said waste component catching space, wherein said pulverizing cutter is rotatable, wherein said communication means comprises at least one first through hole formed in a peripheral portion of said partition wall and a second through hole formed at the center of said partition wall, and wherein said air flow producing means is positioned in said cutter receiving space to produce air flowing from said cutter receiving space through said at least



one first through hole to said waste component catching space and flowing back to said cutter receiving space through said second through hole when coffee beans are being pulverized; and

guiding means associated with one of said casing and said partition wall,

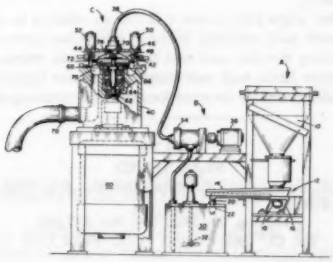
whereby waste components produced during pulverization of coffee beans are transported by said air flow from said cutter receiving space to said waste component receiving space.

4,469,284

COMMINUTING APPARATUS WITH IMPROVED ROTOR AND STATOR RECESS CONSTRUCTION

Ronald L. Brubaker, Euclid; James J. Tloczynski, Parma, both of Ohio; Melvin Budzol, Schaumburg, Ill.; Clifford J. Ahola, Cleveland, Ohio; Frederick P. Boyle, Euclid, Ohio; Truman D. Parkinson, Chardon, Ohio, and James C. Rine, Lake City, Fla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 29, 1981, Ser. No. 316,217
Int. Cl.³ B02C *7/12*
U.S. Cl. 241—25 TR **14 Claims**



1. A comminuting apparatus comprising:

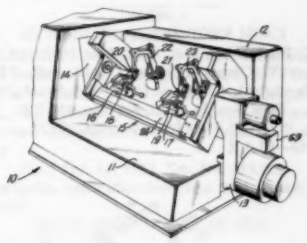
a stator and a rotor, the stator and rotor defining a receiving region therebetween for receiving a mixture of pellets to be comminuted and fluid, the stator and rotor having peripheral abrasive surfaces surrounding the receiving region for defining a grinding zone therebetween, the rotor having at least one recess therein, the rotor recess having an outwardly extending elongate shape portion with a first end in fluid communication with the receiving region and terminating at a second end on the rotor peripheral abrasive surface to provide a path for the pellets from the receiving region to the grinding zone, the rotor recess further having an upstream edge generally in a direction of rotation and a trailing edge generally opposite the upstream edge, the trailing edge at said second end having an enlarged portion extending downstream, the trailing edge enlarged portion having a sloping base of diminishing depth away from the rotor recess upstream edge and a generally arched perimeter, at least generally adjacent the elongate shape portion second end whereby pellets pumped into the rotor recess by centrifugal force are wedged between the sloping enlarged portion base and the stator peripheral abrasive surface and the stator recess.

4,469,285

COIL WINDING MACHINE WITH MULTI-AXIS POSITIONING FOR WINDING TELEVISION DEFLECTION COILS

Rudolf Fahrbach, Branchville, N.J., assignor to Universal Manufacturing Co., Inc., Irvington, N.J.

Filed Sep. 1, 1982, Ser. No. 413,672
Int. Cl.³ H01F *41/06, 41/08;* B65H *81/00*
U.S. Cl. 242—7.14 **6 Claims**



1. A coil winding machine for winding wire on a core to form a coil, the coil winding machine comprising, mounted on a base:

a flyer arm means which is revolvable about an imaginary axis and carries the wire to wind it upon said core;

means to rotate said flyer arm about said axis;

means to reciprocatively move said flyer arm means back and forth along said axis;

clamp means to removably hold said core while it is being wound;

arbor means connected to said clamp means;

means to rock said arbor means back and forth about an axis to vary the position of said core relative to said flyer arm;

cradle means carrying said arbor means and pivotally mounted on said base; and

means to rock said cradle means back and forth about its pivot mount.

4,469,286

FREE FLOATING RIDER ROLL BEAM MOUNTING

Robert Greding, Beaconsfield, Canada, assignor to Valmet-Dominion Inc., Lachine, Canada

Filed Feb. 28, 1983, Ser. No. 470,442
Int. Cl.³ B65H *17/12, 25/26*
U.S. Cl. 242—65 **16 Claims**

1. A rider roll beam mounting for a winder comprising:

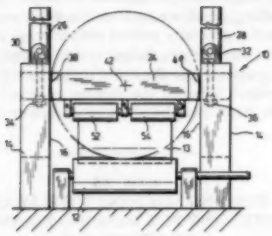
a pair of frames each having a substantially vertical face;

a rider roll beam spanning the distance between said frames;

an arcuate guiding surface adjacent each axial end of said beam in face-to-face relationship with the adjacent one of said vertical faces;

said surfaces being curved so as to cooperate with said

vertical faces and permit rotation of said beam about a horizontal axis substantially perpendicular to the longitudinal axis of said beam and located at the midplane of said winder while limiting axial movement of said beam along its longitudinal axis;



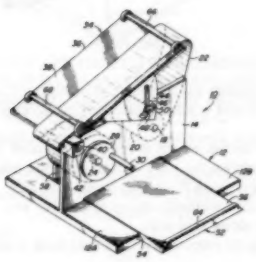
means for moving each end of said beam while permitting said rotation of said beam and means for guiding movement of said beam in a vertical path substantially parallel to said longitudinal axis.

4,469,287

CASH REGISTER TAPE VIEWER

Clifford O. Pfister, Madison, Wis.; Alan L. Strand, Glenview, and Robert W. Cormack, Downers Grove, both of Ill., assignors to Psychological Systems Corp., Oak Brook, Ill.

Filed Sep. 16, 1982, Ser. No. 418,728
Int. Cl.³ B41J *15/02;* B21C *47/22*
U.S. Cl. 242—67.3 R **11 Claims**



1. Apparatus for use in auditing a cash register tape, comprising in combination

a base,

an upright support structure mounted to said base,

a first spindle mounted to said support structure and having one free end, said first spindle being adapted to receive a roll of cash register tape to be viewed,

a second spindle rotatably mounted to said support structure and having one free end, said second spindle having means thereon for attachably receiving the end of a roll of cash register tape mounted on said first spindle,

means for rotating said second spindle to transfer tape from a roll of cash register tape mounted on said first spindle to said second spindle, and

guide means including an upright guide plate fixedly mounted to a guide bottom member, said guide bottom member being slidably mounted to said base with said upright guide plate extending perpendicularly to the principal longitudinal axes of said spindles,

said upright guide plate having an opening for receiving said second spindle, and

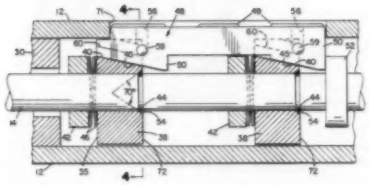
said guide bottom member slidable movement being in a direction parallel to said axes for adjustable disposition of said upright guide plate in proximity to one edge of a cash register tape mounted to said spindles.

4,469,288

EXPANSIBLE SHAFT WITH ACTUATOR RETAINING MEMBER AND SPHERICAL BEARING SURFACE

Virgil M. Pontes, N. Dighton, Mass., assignor to Double E Company Inc., Brockton, Mass.

Filed Feb. 28, 1983, Ser. No. 470,142
Int. Cl.³ B65H *75/18, 75/24*
U.S. Cl. 242—72.1 **20 Claims**



1. In an expansible shaft comprising

an axially-extending outer housing,

an operating rod mounted coaxially of said housing and arranged for movement axially relative to said housing,

a core engager movable radially relative to said housing and said operating rod between an expanded position in which said core engager extends beyond the outer wall of said housing and a retracted position in which said core engager is positioned radially within said expanded position thereof, and

an actuator mounted on said rod and arranged to cause said core engager to move towards said expanded position in response to movement of said rod axially relative to said housing,

that improvement wherein:

said actuator includes a bore through which said rod extends and having adjacent one end thereof a countersink surrounding said bore and defining a generally inwardly facing annular surface inclined relative to said rod at an angle of not more than 45°; and,

a generally annular retaining member is mounted in a circumferential groove in the outer surface of said rod in position for engaging said surface of said recess of said actuator,

whereby when said actuator is forced relative to said rod towards said retaining member interaction between said retaining member and said surface of said recess of said actuator limits said movement and causes application of radially inwardly directed force on said retaining member.

4,469,289

REEL STAND

George B. Gebo, 4645 E. Industrial St., #2, Simi Valley, Calif. 93063

Filed Sep. 29, 1982, Ser. No. 427,548
Int. Cl.³ B65H *49/00, 49/32;* F16B *7/04*
U.S. Cl. 242—85 **1 Claim**

1. A pivoting storage reel or spool stand comprising:

a cable or wire storage reel having opposite ends;

axle means carried on said reel ends lying along the turning axis thereof;

stanchion means including a pair of spaced apart posts separated by said reel rollably engagable with said axle means;

base means carried on said stanchion means for supporting said stanchion means and said reel on a supporting surface;

said base means having a pivot location about which said stanchion means rotates carrying said reel therewith in an arcuate path about said base means pivot location;

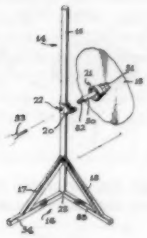
carriage means slidably mounted on each of said posts having rollers for movably supporting said axle means;

releasable self-locking means operably carried on each of said carriages for securing with said posts;

said self-locking means includes a spring biased stack of lugged washers adapted to selectively bind with said post and carriage in position on said post;

said axle means includes a pair of shafts, each shaft having a wedge on one end engagable with the end of said reel and a square fitting on its opposite end; said shaft being adapted to rollably rest on said rollers of said carriage;

each of said carriages includes a cylindrical body having a cavity storaging said self-locking lugged washers and an



outwardly projecting yoke carrying said rollers with said post extending upwardly through said cavity;

said lugged washers adapted to bind between said post and said carriage to releasably secure said carriage to said post;

said base means includes a pair of support members joined at opposing adjacent ends at a right angle with respect to each other to define a juncture and said juncture further joined by one end of said post normal to said support members;

said juncture of said support members and said post end constituting said pivot location; and

each of said posts having a hard grip end opposite its ends joined with said support members for use by the user in manually pivoting said reel about said pivot location.

4,469,290

THREAD GUIDE FOR COAXIALLY MOUNTED BOBBINS

Johannes Frentzel-Beyme, Monchengladbach, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

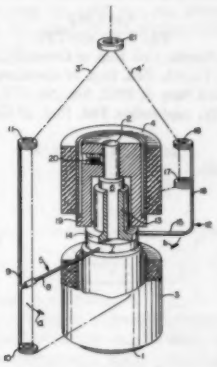
Filed Jul. 28, 1982, Ser. No. 402,611

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130615

Int. Cl.³ B65H *49/00, 57/20;* **D01H** *7/86, 13/04*

U.S. Cl. 242—128 **7 Claims**

1. A combination of two bobbins having yarns wound thereon mounted coaxially one above the other, a thread guide flyer arrangement for drawing yarns off each of said bobbins, bearing bushing mountings for said thread guide flyer arrangement being located between said bobbins, said thread guide flyer arrangement being mounted on said bearing bushing mountings and said bearing bushing mountings consist of two



bearing bushing mountings in sliding frictional contact with each other.

4,469,291

APPARATUS FOR INTRODUCING STRIP-SHAPED MATERIAL INTO CASSETTES OR THE LIKE

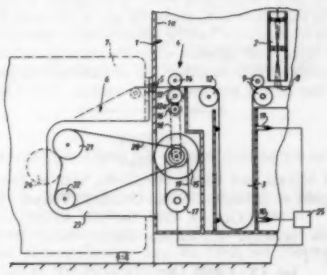
Helmut Treiber; Christian Götze, both of Munich, and Günter Lammel, Eching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 418,090

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1981, 3151932

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—191 **19 Claims**



1. Apparatus for transporting a web of flexible material, particularly for transporting a web of photosensitive material from a copying machine into a receptacle which stores the web in the form of convolutions, comprising first web advancing means including a web-contacting first rotary component; second web advancing means including a second rotary web-engaging component; motor means for driving said components; freewheel means interposed between said motor means and said first component so that the latter can be rotated by said motor means to advance the web and by the web when the latter is advanced by said second advancing means and the peripheral speed of said second component exceeds a given peripheral speed at which said first component can be driven by said motor means; first and second monitoring means for respectively monitoring the peripheral speeds of said first and second components; and means for generating signals when the

ratio of monitored peripheral speeds of said components is outside of a predetermined range.

4,469,292

TAPE CASSETTE

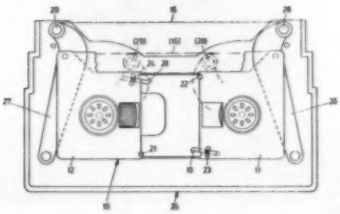
Hans Mangold, Fuerth, Fed. Rep. of Germany, assignor to Grundig E. M. V., Fuerth, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,208

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1981, 3142519

Int. Cl.³ G11B *23/04*

U.S. Cl. 242—199 **10 Claims**



1. A tape cassette for recording/playback devices and the like, said cassette being adjustable to accommodate for differences in distance between take up and supply reel spindles in such devices, said cassette comprising: essentially rectangular sections each with two opposed walls in which respective winding spools are mounted; recording and/or playing tape maintained on said spools and adapted to pass therebetween in a predetermined path essentially parallel to one side of the cassette; an opening in said cassette adjacent said path to allow access to the tape by recording, playback or erase heads of a recorder/playback device; guide means having a rectangular cross-section displaceably connecting said sections together by engaging inner surfaces of said two opposed walls of each said section wherein the sections are displaceable along the guide means to vary the distance between the spools while maintaining them aligned so as to allow the use of the cassette in recorder/playback devices having different distances between take up and supply reel spindles while maintaining said tape in said predetermined path whether the sections are displaced from each other or in a non-displaced position.

4,469,293

REEL SHAFT

Kazumi Miyazi, and Hideo Tomabechi, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1982, Ser. No. 435,232

Claims priority, application Japan, Nov. 9, 1981, 56-166836[U]

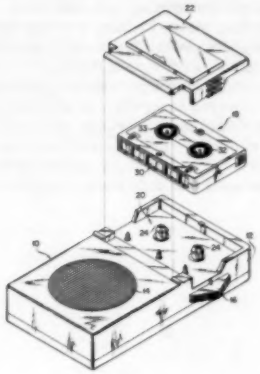
Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*

U.S. Cl. 242—200 **4 Claims**

1. A reel shaft for engaging a substantially cylindrical reel hub of a tape cassette having a plurality of engaging projections protruding from the inner peripheral surface of the reel hub, to impart rotational force to the reel hub, comprising:

a cylindrical shaft body to be fitted into the reel hub for rotatably driving the reel hub about the axis of said shaft body, said shaft body having a base end and a distal end opposite said base end in the axial direction of said shaft body, the distal end portion of said shaft body being tapered for freely entering the reel hub without interference with the engaging projections of the reel hub; and

a plurality of elongate projections formed at regular intervals in the circumferential direction on the outer peripheral surface of said shaft body, said elongate projections each extending in the long direction to define a predetermined angle to the axial direction of the shaft body, and extending from said base end to the vicinity of said distal end of said shaft body so that said elongate projections engage the engaging projections of the reel hub for rotating the reel hub and for urging the reel hub in the axial direction of said shaft body as said shaft body rotates.



4,469,294

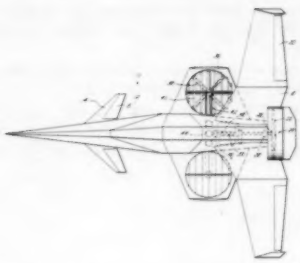
V/STOL AIRCRAFT

Robert T. Clifton, 7999 Hansen, #420, Houston, Tex. 77061

Filed May 20, 1982, Ser. No. 380,480

Int. Cl.³ B64C *27/22*

U.S. Cl. 244—12.3 **1 Claim**



1. A vertical and short take-off and landing aircraft comprising:

a fuselage made of foamed core material;

a set of canard wings attached to said fuselage forward of the center of gravity of said aircraft, said canard wings including elevator members pivotally attached thereto for controlling pitch of said aircraft;

a second set of lift fan wings, having relatively thick cross-section, attached to said fuselage at about the center of gravity of said aircraft, each one of said second set of lift fan wings comprises:

a generally circular duct extending vertically through said wing;

a multi-bladed fan mounted for free rotation axially in said duct;

prime mover means for selectively applying rotational torque to said fan, said prime mover means arranged so as to drive said fans in contrarotation to each other; said prime mover means comprising at least two engines driving a central shaft, said engines capable of producing in excess of one horsepower per pound of engine weight;

means for selectively applying the rotation of the center shaft to the lift fans;

second shaft transmission means for selectively applying rotation of said central shaft to a pusher propeller located aft of said lift wings; and

fan control means for controlling the inflow and outflow of gas through said circular duct comprising:

pivoted openable forward opening inlet control vanes in the duct inlet, the upper surface of said vanes being shaped so that they form an airfoil when the vanes are closed, the forward end of one of said vanes being adapted to be received in flush mating engagement with the rearward portion of an adjacent vane, said forward opening inlet control vanes for causing forward motion of said aircraft to produce a ram air effect in said duct;

pivoted discharge vanes on the underside of said duct to direct the discharge of fluid through said duct; and

at least one control arm connected to said vanes for causing the simultaneous movement of said vanes;

a third set of relatively thin main lift wings attached to said fuselage aft of the center of gravity of said aircraft, said third set of lift wings including ailerons pivotally connected thereto; and

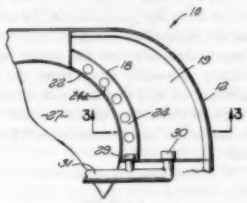
orthogonal working surfaces arranged aft of said pusher propeller.

4,469,295

HYDRODYNAMIC RAM ATTENUATING FUEL TANK

Irving Schuster, Columbus, Ohio, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 21, 1978, Ser. No. 972,141
Int. Cl.³ B64D *37/08*; B65D *25/04, 25/18*
U.S. Cl. 244—135 R **11 Claims**



1. In an aircraft having an engine inlet duct, a fuel tank subject to penetration by a projectile comprising:

a casing defining a hollow fuel storage compartment, said casing being comprised of a plurality of walls connected together to form said casing, one of said walls being a common wall of said inlet duct by also forming a portion of a wall of said inlet duct;

a liner in the form of a sheet positioned within said casing to partition said storage compartment into two cells, said liner forming only one side of each of said two cells, one cell being a main tank and the other cell being an auxiliary tank, said liner being constructed of a shock attenuating frangible membrane;

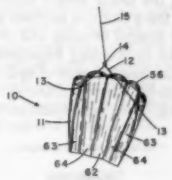
securing means fastening said liner to said common wall, said liner being spaced from said common wall by said securing means, said liner in combination with said securing means having preselected strength characteristics relative to said common wall such that said liner will deflect and rupture under hydrodynamic ram pulse energy sufficient to puncture said common wall created by shock waves resulting from the projectile penetrating within said fuel tank with hydrodynamic ram pulse energy attenuation by said deflection and rupture of said liner being substantially maximized, whereby impact damage to said common wall from said shock waves is reduced.

4,469,296

FISHING KITE

Richard P. Lee, 1439 S. 134th St., Omaha, Nebr. 68144

Filed Mar. 15, 1982, Ser. No. 357,990
Int. Cl.³ B64C *31/06*; B64D *17/02*
U.S. Cl. 244—153 R **3 Claims**



1. A foldable kite, comprising

a flexible top panel having a generally trapezoidal shape and including a transverse top leading edge, a transverse top trailing edge shorter than said top leading edge and two elongated top side edges of generally equal length,

a flexible bottom panel having a generally trapezoidal shape and including a transverse bottom leading edge shorter than said top leading edge, a transverse bottom trailing edge shorter than said bottom leading edge and top trailing edge and two elongated bottom side edges of generally equal length,

the longitudinal spacing between the top leading and trailing edges being substantially equal to the longitudinal spacing between said bottom leading and trailing edges,

said top side edges being joined to said bottom side edges,

said top panel being furthermore secured to said bottom panel along a plurality of securement lines extending from said leading edges to said trailing edges in generally equally spaced relation between said side edges thereby defining a plurality of connected flexible tubes open at each end to allow air flow therethrough, and

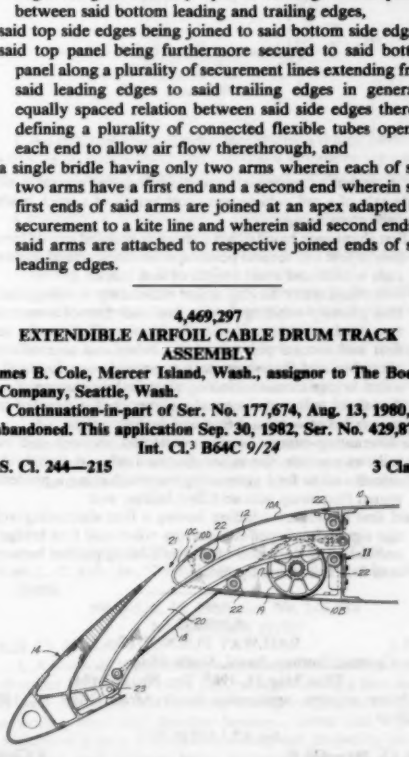
a single bridle having only two arms wherein each of said two arms have a first end and a second end wherein said first ends of said arms are joined at an apex adapted for securement to a kite line and wherein said second ends of said arms are attached to respective joined ends of said leading edges.

4,469,297

EXTENDIBLE AIRFOIL CABLE DRUM TRACK ASSEMBLY

James B. Cole, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 177,674, Aug. 13, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,873
Int. Cl.³ B64C *9/24*
U.S. Cl. 244—215 **3 Claims**



1. A mechanism for extending and supporting a high-lift device relative to an airfoil, comprising: a carrier track con-

nected to said high-lift device and extending chordwise of said airfoil; track support means secured to said airfoil and being in bearing contact with said carrier track for guiding support thereof; said carrier track being of a slotted I-beam shaped cross section having approximately an I-beam mass distribution and whose web section and lower flange are vertically split and laterally spaced part forming an inverted U-shaped slot opening along the lower length thereof; a cable mounted within said carrier track slot and fastened at either end thereof, at the approximate neutral bending axis of said carrier track; a cable drum adapted to winding engagement with said cable fastened between the interior ends of said carrier track slot for extending the high-lift device relative to said airfoil; and thereby, increasing the aerodynamic lift characteristics thereof.

4,469,298

AXLE SENSOR

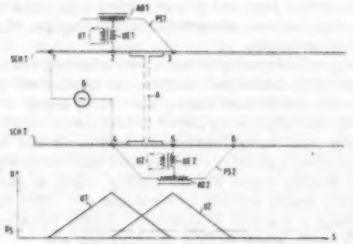
Helmut Uebel, Leonberg, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 19, 1981, Ser. No. 323,143

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046103

Int. Cl.³ B61L *11/08, 13/04*

U.S. Cl. 246—249 **17 Claims**



1. A sensor arrangement for detecting the presence of a single axle of a rail vehicle in a short length of a track having two rails comprising:

a first shunt path having two ends each coupled to a different one of first and second points spaced along one of said two rails within said short length of said track;

a first transformer having a first secondary winding and a first primary winding having one end thereof connected to a third point on said one of said two rails between said first and second points and the other end thereof connected to said first shunt path to provide one diagonal of a first bridge circuit including electrical resistances of said first shunt path and electrical resistances of said one of said two rails between said first and second points;

an alternating-current source connected between said two rails to provide the other diagonal of said first bridge circuit and to feed alternating current having a predetermined frequency into said first bridge; and

said first secondary winding having a first alternating-voltage signal developed thereacross when said first bridge is unbalanced by a wheel of said axle being present between said first and second points.

4,469,299

RAILWAY TURNOUTS

Imre Csontos, Durban, Natal, South Africa

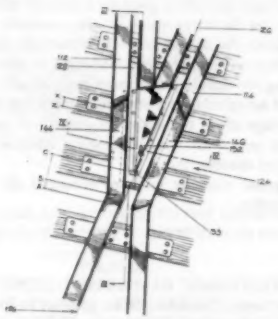
Filed May 14, 1981, Ser. No. 263,484

Claims priority, application South Africa, May 19, 1980, 80/2969

Int. Cl.³ E01B *7/12*

U.S. Cl. 246—435 R **4 Claims**

1. A railway turnout comprising a main line rail, a siding rail, two wing rails, and a nose terminating in a point, said main line and siding rail having intersecting gauge lines convergent along the main line and siding rails, crossing ahead of the point and diverging from the point rearwardly along the nose, the wing rails abutting the main line rail and the siding rail, respectively at one end of each, the other end of each wing rail being free, each wing rail having two horizontal axes, a first axis of which extends longitudinally along the wing rail and a second axis of which is normal to the first axis, the running surface of the nose being substantially co-planar with the running surfaces of the rails in the rest of the turnout and the wing rails being provided with tread surfaces which are inclined above



the plane of the running surfaces along said two horizontal axes, the inclination along the first axis on each wing rail extending longitudinally along the wing rail towards the free end thereof and rising to a high point from a low point where the wing rail deviates from the gauge line of the associated main or siding rail, and the inclination along the second axis commencing from an inner edge, adjacent the gauge line of each wing rail and extending upwardly away from the inner edge, the angles of inclination on said first and second axes being dependent on the angle of deflection of the turnout, the shape of an average worn car wheel and the taper on wheels which are to use the turnout.

4,469,300

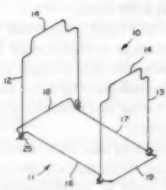
WIRE BAG STAND FOR HOLDING PLASTIC BAG

Thomas M. Valesko, Seneca Castle, N.Y., assignor to Valerco Corporation, Seneca Castle, N.Y.

Continuation-in-part of Ser. No. 259,992, May 4, 1981, Pat. No. 4,364,534. This application Jun. 18, 1982, Ser. No. 390,051

Int. Cl.³ A63B *55/04*

U.S. Cl. 248—97 **16 Claims**



1. A plastic bag stand comprising:

a. a base;

b. a pair of generally U-shaped wire sides mounted on said base to extend upright above said base in a bag-holding position;

c. top regions of said sides being bent outward to engage and hold an open mouth of a plastic bag;

d. said base having stop means engaging lower regions of

said sides at predetermined angles to said base in said bag-holding position and preventing said lower regions of said sides from inclining toward each other at any angles less than said predetermined angles, which are selected for spacing said top regions of said sides apart by more than a bag-mounting distance; and

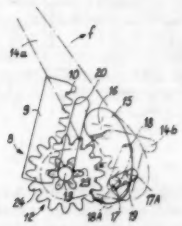
e. upright spans of said sides being sufficiently resilient in the region between said stop means and said top regions so that said sides can be manually sprung toward each other to bring said top regions within said bag-mounting distance.

4,469,301

DEVICE FOR REGULATING THE HEIGHT OF AN ELEMENT AND THE APPLICATION THEREOF IN A VEHICLE SEAT BASE

Claude Chevalier, Sully sur Loire, France, assignor to Compagnie Industrielle de Mecanismes, France

Filed Jun. 7, 1982, Ser. No. 385,987
Claims priority, application France, Jun. 17, 1981, 81 11979
Int. Cl.³ A47G *29/00*
U.S. Cl. 248—371 **4 Claims**



1. A device for adjusting the height of an element with respect to a support therefor, said device comprising a rack rigid with the support and an actuatable toothed sector movably mounted on said element, said device comprising effort-reducing gear means which are interposed between the rack and the toothed sector and comprise a double pinion which has small teeth in mesh with the rack and large teeth in mesh with the toothed sector, the pinion has a shaft which is guided in means defining a slot which is parallel to the rack and rigid with the support.

4,469,302

FLAG STAFF HOLDER FOR WINDPROOF SIGNS

Theodore L. Stoudt, Lake Oswego, Oreg., assignor to Sign-up Corporation, Portland, Oreg.

Filed Jul. 17, 1981, Ser. No. 239,215
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—512 **1 Claim**

1. An apparatus for securely holding a flag staff comprising:

a plurality of hollow, cone-shaped housings formed of thin metal each having a cone-shaped interior;

a staff extending in a direction opposite to the open end of the cone-shaped interior; and

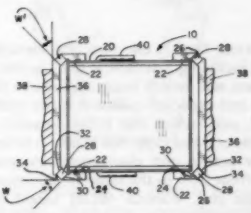
a plurality of concentric rings of different diameters stamped in said metal so that they protrude from the interior wall of said housing toward the center of the cone, at least two of said rings positioned to contact said staff, said first ring contacting said staff on the end of said staff, and said second ring contacting said staff at a point axially spaced from said end of said staff, adapted to retain said staff and prevent said staff removal out of said housing due to laterally applied forces, while permitting removal due to vertical forces applied to said staff.

4,469,303

VIBRATION ISOLATION APPARATUS

Robert K. Snyder, Anoka, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Continuation of Ser. No. 242,137, Mar. 9, 1981, abandoned. This application Dec. 29, 1982, Ser. No. 454,318
Int. Cl.³ G01F *15/08*
U.S. Cl. 248—634 **10 Claims**



1. An isolation apparatus for supporting a sensor housing on a surface to which linear and rotational vibrations are applied, the housing having three mutually perpendicular axes comprising:

a plurality of mounts fixedly coupled to said surface, each having at least two ends thereon;

a plurality of brackets fixedly coupled to the housing, each having at least a first surface thereon; and

separate elastic means supported between each one of the mount ends and the first surface of each bracket for reducing the vibration applied to the housing;

the mount ends and first surfaces being oriented to support the respective separate elastic means relative to the housing such that the resolved vibrations along at least two of the three axis result in compression of at least one half of the quantity of elastic means and wherein the separate elastic means at the respective mount ends and first surfaces are all in compression responsive to rotational vibration about the third axis during each cycle of vibration.

4,469,304

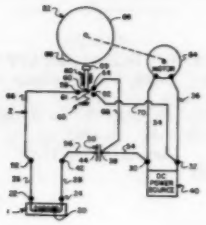
PULSE ACTUATED SOLENOID VALVE

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Filed Apr. 15, 1980, Ser. No. 140,538
Int. Cl.³ F16K *31/08*
U.S. Cl. 251—65 **5 Claims**

1. A solenoid valve having a housing, said housing having a chamber located therein, a first passage having a first opening in said chamber, said housing having a cylindrical opening extending from said chamber having a closed end, a plunger positioned in said cylindrical opening and projecting into said chamber, said plunger being mounted for axial movement between the closed end of said cylindrical opening and one side of said chamber, a second passage having a second opening

into said chamber on said one side of said chamber with said second opening being aligned with said plunger so that when said plunger is positioned against said chamber wall said second opening is closed, means for biasing said plunger against said second opening, a metal core which can conduct magnetic flux forms the closed end of the cylindrical opening, an electromagnetic coil is positioned around said cylindrical opening encircling the bottom of the core and mating end of said plunger, said plunger being a permanent magnet, means for placing an impulse of current flow in one direction through the electromagnetic coil to momentarily move the magnetic plunger in one direction against said biasing means to magnetically engage the bottom of the core, said means for placing an



impulse of current flow in one direction through the electromagnetic coil including a switch, a D.C. power source and a capacitor means; said switch being movable to place said D.C. power source and capacitor means in series with said electromagnetic coil, said switch also being movable to place said electromagnetic coil and capacitor means in series to discharge said capacitor across said electromagnetic coil placing an impulse of current flow in the opposite direction through the electromagnetic coil, wherein circuit means are connected across said electromagnetic coil which will limit the current flow through said electromagnetic coil to prevent the magnetic flux caused by the impulse from said capacitor means from being excessive thereby reducing any tendency to demagnetize said plunger.

4,469,305

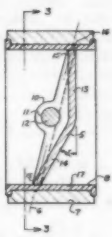
LOW TORQUE BUTTERFLY VALVE DISC

Hans D. Baumann, 32 Pine St., Rye, N.H. 03870

Continuation of Ser. No. 313,830, Oct. 22, 1981, abandoned. This application May 5, 1983, Ser. No. 491,808

Int. Cl.³ F16K *1/22*

U.S. Cl. 251—305 **5 Claims**



1. A low torque butterfly disc comprising:

a. an oval shaped disc whose planary axis is angularly offset from the perpendicular axis of the cylindrical bore of a butterfly valve and having an outer periphery forming a rim which is fitting closely within said cylindrical bore and forming a straight line of contact with said bore when in the closed valve position, said disc being further composed of one upper and one lower centrally connected nearly semicircular wall section, each having partially flattened center portions whose planary axes are angularly offset in respect to each other, the outer periphery of both sections interjoining to form said rim;

b. at least one perpendicular hub section located on a common axis central to said cylindrical bore and straddling the shortest width of said oval shaped disc and containing within a bore to receive a supporting valve shaft.

4,469,306

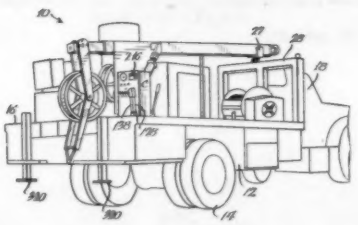
APPARATUS FOR PULLING CABLE THROUGH UNDERGROUND CONDUIT

Delbert W. Wimer; Daniel C. Carlson, both of Lake Worth; Edward C. Elwood, Margate, and Eugene T. Stewart, Tavernier, all of Fla., assignors to Burnup & Sims Inc., Plantation, Fla.

Continuation of Ser. No. 161,286, Jun. 20, 1980, Pat. No. 4,382,581. This application Sep. 29, 1982, Ser. No. 427,743

Int. Cl.³ B23Q *3/08*

U.S. Cl. 254—134.3 FT **5 Claims**



1. A cable drawing mechanism comprising a vehicle having a frame defining a bed, a boom having a horizontal first portion supported on said bed and a second portion universally pivoted on an outer end of said first portion, a cradle structure pivotally movable about a first horizontal axis generally parallel to said first portion on said outer end of said first portion and having means for pivoting said cradle about said horizontal axis, an extension, on an intermediate portion of said second portion and pivotally supported on a second horizontal axis on said cradle structure that is substantially perpendicular to said first horizontal axis with means for pivoting said second portion about said second horizontal axis on said cradle structure, a winch supported on said bed adjacent an inner end of said first portion and having a winch line extendable along said horizontal first portion and said second portion, said winch including a drum freely rotatable in one direction to allow said winch line to be unreeled therefrom and having a brake associated therewith for controlling the free rotation, a drive motor and a clutch between said drive motor and said drum engageable to rotate said drum in an opposite direction to reel said winch line on said drum, and a level winder mechanism between said drum and said inner end of said first portion and driven by said drive motor for controlling the position of said winch line on said drum during reeling thereon.

4,469,307

CONNECTOR BRACKET FOR AN ENGINE-LIFTING WINCH

Douglas E. Bell, 8311 Roanoke Ave., Takoma Park, Md. 20912

Filed Nov. 9, 1982, Ser. No. 440,466

Int. Cl.³ B25B *25/00*; B21F *9/00*

U.S. Cl. 254—199 **11 Claims**

9. A tripod, comprising:

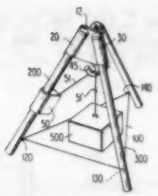
a base plate having two sides,

first and second tripod leg receiving means, said leg receiving means being mounted on one of said sides of said base plate in spaced apart relation,

an elongated rod member having an upper portion for engaging a tripod leg and a lower portion forming a load

bearing member, and mounted on the other of said sides of said base plate at a central location thereof;

first, second and third tripod legs each having first and



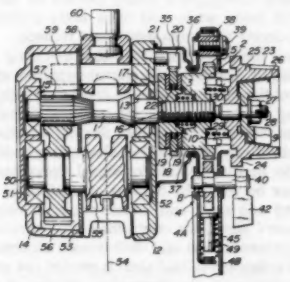
second ends, said first ends of two of said legs being received in said leg receiving means, and said first end of said third leg including means for receiving therein said upper end of said elongated rod member.

4,469,308

LEVER HOIST

Takayoshi Nakamura, Atsugi; Kazuo Maeda, Yokohama; Masayuki Ohno, Tokyo, and Teruo Akiyama, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Kito, Kawasaki, Japan

Filed Feb. 25, 1983, Ser. No. 469,654
Claims priority, application Japan, Mar. 11, 1982, 57-37205
Int. Cl.³ B66F *19/00, 3/30;* G05G *1/12;* F16D *13/42*
U.S. Cl. 254—350 **8 Claims**



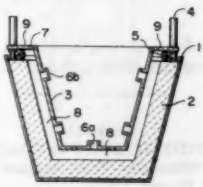
1. A lever hoist comprising; a change gear provided on a driving member threadedly engaged on a driving shaft for driving a sheave about which is wound up a chain, rope or the like for a load, an operating lever rockable about said driving member by a hand, a winding-up driving pawl engageable with teeth of said change gear and driven by said operating lever in a winding-up direction for the load, a winding-off driving pawl engageable with the teeth of said change gear and driven by said operating lever in a winding-off direction for the load, a braking assembly preventing said change gear from being driven from a side of said sheave and having an axially operating member directly or indirectly engaging said driving member for releasing said braking assembly, a brake spring control member rotatably fitted on said driving shaft, a brake clamping spring arranged between said driving member and said brake spring control member, a direction change transmission mechanism for transforming rotation of said brake spring control member into axial urging force of said brake clamping spring, a spring supporting member rotatably and axially movably fitted on said driving shaft between said driving member and said brake spring control member for supporting one end of said brake clamping spring, said driving member and said spring supporting being formed on their opposite surfaces with protrusions for transmitting rotative movements with each other, and cams and cam followers being formed on opposite surfaces of said spring supporting member and said brake spring control member, respectively, for moving said spring supporting member to compress or release said brake clamping spring in response to rotation of said brake spring control member in one or the other direction to form said direction change transmission mechanism.

4,469,309

CORE FOR BLOW-FORMING THE LINING OF VESSEL FOR MOLTEN METAL, A LINING METHOD USING SAID CORE, AND A LINING COMPOSITION USED IN SAID LINING METHOD

Masaru Takashima, Komae; Shigeru Matsuyama, Oyama; Yoshihiro Hayashi; Hisaji Ito, both of Ohtsu; Kotaro Fujita, Suita; Kenji Inai, and Shoji Takemoto, both of Ohtsu, all of Japan, assignors to Aikoh Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 347,935
Int. Cl.³ B22C *9/12*
U.S. Cl. 266—44 **5 Claims**



1. A core for blow-forming the lining of a vessel adapted to contain molten metal, which core is provided with a main body having blow-in holes and an exhaust port, the side face and the lower faces of said body having essentially the same dimensions and shape as the inside lining of said vessel for molten metal, a flange mounted approximately horizontally in the outer direction at the periphery of the upper end of said main body, a plurality of supports which are actuated downwardly from said flange, and shock absorber means mounted beneath said flange adapted to engage said vessel for molten metal to form an essentially airtight seal between said flange and said vessel for molten metal.

4,469,310

AUTOMATIC CENTERING PIPE BEVELING MACHINE

Hurshel L. Jones, 9504 E. 136th St. North, Collinsville, Okla. 74021

Filed Sep. 22, 1983, Ser. No. 534,672
Int. Cl.³ B23K *7/04, 7/10*
U.S. Cl. 266—56 **9 Claims**

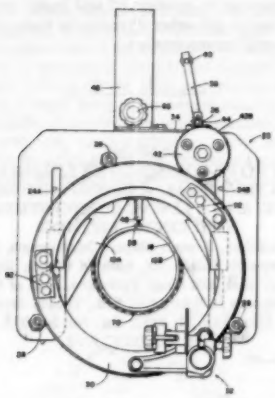
1. An apparatus for centering a member relative to a cylinder comprising:

a yoke having two leg portions extending from an apex the legs being spaced X° apart, wherein X is more than 0° and less than 180°, the yoke being positionable on a cylinder with the legs in engagement therewith;

a frame slideably supported to said yoke and moveable in the plane perpendicular the cylindrical axis and simultaneously in the plane of the cylindrical axis including said yoke apex, the frame having a portion thereof to be centered with respect to the cylindrical axis of the cylinder;

a feeler extendable perpendicular to the surface of cylinder received by said yoke and moveable towards the cylinder surface in a fixed relationship with the movement of said

frame relative to said yoke, the ratio of movement of the feeler to the movement of said frame being 1-Sin X/2/1



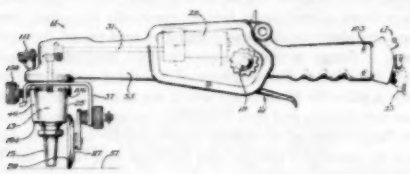
whereby the frame portion is centered when said feeler contacts the surface of the cylinder.

4,469,311

MOTORIZED HAND TORCH

David A. Laing, Willoughby, Ohio, assignor to Victor Equipment Company, Denton, Tex.

Filed Dec. 5, 1983, Ser. No. 557,845
Int. Cl.³ B23K *7/02, 7/10*
U.S. Cl. 266—67 **9 Claims**



1. A gas cutting machine for cutting steel plate or the like comprising:

a. a device head having a cutting torch tip;

b. respective conduit means for supplying to said tip, respectively, preheat oxygen, cutting oxygen and fuel gas;

c. a drive cylinder journalled for rotation about said head; said drive cylinder having appreciable height so that a drive wheel can be moved upwardly and downwardly while engaging its peripherally outer cylinder wall;

d. a drive wheel engaging the peripherally outer cylindrical wall of said drive cylinder so as to be driven thereby and moveable longitudinally therealong so as to allow adjustment in height of said tip with respect to said steel plate to allow cutting at a desired angle;

e. a motor;

f. a power transmission means connected with said motor and drivingly connected with said drive cylinder so as to drive said cylinder responsive to said motor;

g. control means for controlling said motor;

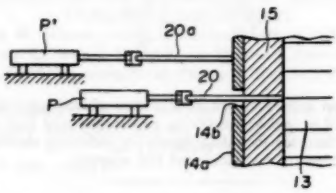
h. bracket connected with said housing and supporting said drive wheel adjacent said tip; said bracket being adapted to be affixed such that said drive wheel drives in a straight line; and being adapted to be loose so as to rotate in a full 360° circle about said tip.

4,469,312

MELTING FURNACE OF A RIGID STRUCTURE

Koichi Konda, and Shoji Shinohara, both of Kagawa, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,991
Claims priority, application Japan, Mar. 13, 1982, 57-40047
Int. Cl.³ C21C *5/42*
U.S. Cl. 266—99 **3 Claims**



2. A melting furnace of a rigid structure comprising:

(a) a hollow body for receiving a material to be melted, said body comprising bricks joined together;

(b) a shell of iron surrounding said brick body so as to restrain a thermal expansion of said body during an operation of said furnace; and

(c) a heating means mounted around said shell for heating said shell; and

(d) means for controlling said heating means in accordance with the degree of thermal expansion of said shell, thereby controlling compressive forces exerted by said shell on said brick body when said brick body is thermally expanded during the operation of said furnace;

said control means comprising a first detecting means for producing a first detecting signal representative of the degree of thermal expansion of said brick body, a second detecting means for producing a second detecting signal representative of the degree of thermal expansion of said shell, means responsive to said first and second detecting signals for producing a control signal representative of the difference between the thermal expansions of said brick body and said shell, and a control circuit responsive to said control signal for controlling the operation of said heating means to heat said shell in such a manner that the thermal expansion of said shell is carried out generally in synchronism with the thermal expansion of said brick body.

4,469,313

APPARATUS FOR PRODUCTION OF METAL POWDER

Minoru Ichidate, and Toshihiko Kubo, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Osaka, Japan

Division of Ser. No. 275,506, Jun. 19, 1981, Pat. No. 4,385,929.
This application Mar. 31, 1982, Ser. No. 363,834
Int. Cl.³ B22F *9/08*
U.S. Cl. 266—207 **5 Claims**

1. An apparatus useful in the production of metal powder which includes

a vessel for containing a metal melt and which is capable of sealing off contained metal melt from the surrounding atmosphere, said vessel including a first opening through which metal melt can be added therein and a second opening through which metal melt therein can be drained out thereof in a stream, said second opening being called a draw hole,

first pipe means connected directly to said vessel for supplying a non-oxidizing gas interiorly thereof,

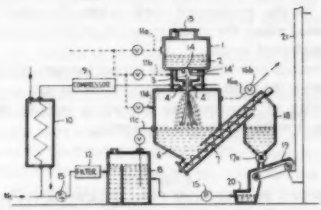
a valve means positionable over said first opening in said vessel to seal off the interior of said vessel from the surrounding atmosphere,

an enclosure means connected beneath said vessel so as to

enclose said draw hole, said enclosure means being capable of sealing off metal melt therein from the surrounding atmosphere, said enclosure means including a granulation tank,

second pipe means connected to said enclosure means for supplying a non-oxidizing gas interiorly thereof,

nozzle means located in said enclosure means adjacent the side of the stream of molten metal passing therethrough from said draw hole and into said granulation tank,



third pipe means extending into said enclosure means and connected to said nozzle means for supplying a non-polar liquid atomizing medium selected from mineral oil, animal oil or vegetable oil to said nozzle means,

said non-polar liquid atomizing medium impinging against the stream of molten metal to produce a mixture of molten metal droplets and atomized non-polar liquid medium in the upper part of said granulation tank, said mixture accumulating in the lower part of said granulation tank.

4,469,314

METAL HEATING FURNACE

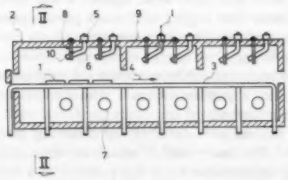
Osamu Takeuchi, Mitaka, and Akira Aizawa, Musashino, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,092

Claims priority, application Japan, May 21, 1981, 56-77006

Int. Cl.³ C21C 9/00

U.S. Cl. 266—252 **1 Claim**



1. A metal heating furnace, comprising a chamber having side walls, substantially horizontal roof and floor, end walls, and a substantially horizontal work support extending along the length of the chamber from end wall to end wall between the roof and the floor along which work pieces are moved, and p0 (a) heating means comprising:

(i) a plurality of imperforate open-end radiant heating tubes which are positioned in longitudinally spaced relation along the length of the chamber in vertically spaced relation and longitudinal alignment with the work support, thereby forming a substantially continuous line of radiant heating means vertically spaced with respect to the work support and longitudinally aligned with it,

(ii) each of the radiant tubes having an outer end mounted in a horizontal part of the chamber and extending from its outer end at an acute angle to the vertical toward the work support with its open inner end adjacent and directed toward the work support, and

(iii) means connected to the outer end of each radiant tube for supplying an air-fuel mixture to the tube for combustion within the tube.

4,469,315

SELF-PUMPING STRUTS FOR VEHICLE SUSPENSION SYSTEMS

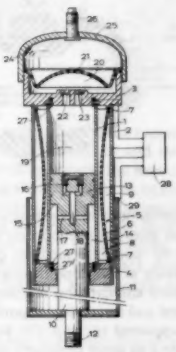
Lawrence G. Nicholls, Birmingham, England, and George B. Powell, Abergavenny, Wales, assignors to Lucas Industries, public limited company, Birmingham, England

Filed Jun. 23, 1982, Ser. No. 391,352

Claims priority, application United Kingdom, Jul. 9, 1981, 8121233

Int. Cl.³ F16F 9/46, 5/00

U.S. Cl. 267—64.17 **5 Claims**



1. A self-pumping strut for vehicle suspension systems comprising a cylinder assembly and a piston rod slidable relative to said cylinder assembly, a piston carried by said piston rod within said cylinder assembly, said cylinder assembly housing a working space for hydraulic fluid bounding said piston, and a reservoir for hydraulic fluid, pump means including an outlet valve housed within said cylinder assembly and operated by displacement of said piston rod relative to said cylinder assembly for pumping fluid from said reservoir through said outlet valve to said working space for increasing the height of said strut, a solenoid-operated valve for controlling reverse flow from said pump means to said reservoir, sensing means for sensing the height of said strut, and control means for opening said solenoid-operated valve to allow fluid to return from said pump means through said solenoid-operated valve directly to said reservoir without passing through said outlet valve when said sensing means detects that displacement of fluid from said reservoir to said working space is not required.

4,469,316

ELASTOMERIC MOUNT WITH HYDRAULIC DAMPING

Johannes van den Boom, Kösching; Wilfried Leitner, Eichstätt; Gert Salewsky, and Hans-Peter Gassen, both of Lenting, all of Fed. Rep. of Germany, assignors to Audi Nsu Auto Union AG, Neckarsulm, Fed. Rep. of Germany

Continuation of Ser. No. 1,052, Jan. 4, 1979, abandoned. This application Dec. 2, 1982, Ser. No. 446,244

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1978, 2802896

Int. Cl.³ F16M 7/00; F16F 5/00

U.S. Cl. 267—140.1 **8 Claims**

1. A mount for securing two relatively displaceable bodies to each other with limited relative freedom of movement, comprising:

a resiliently deformable first wall adapted to be secured to one of the bodies;

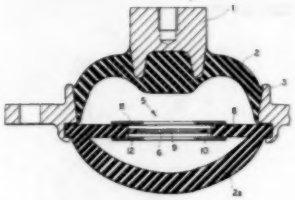
a second wall forming with said first wall a substantially

closed chamber filled with a hydraulic liquid, said second wall being securable to the other of said bodies;

a substantially continuous partition subdividing said chamber into a pair of compartments respectively bounded by said first and second walls, said partition including

(a) an elastically deformable and relatively stiff imperforate annular outer portion extending radially inward from a junction of said walls,

(b) an elastically deformable and relatively yieldable imperforate annular intermediate portion of lesser thickness than said outer portion extending radially inward from said outer portion,



(c) a rigid central portion of substantially the same thickness as said intermediate portion disposed within and supported by said intermediate portion, said central portion having at least one throughgoing orifice; and

a pair of apertured annular stop members spacedly bracketing said central and intermediate portions, said stop members being supported on opposite surfaces of said outer portion adjacent an inner periphery thereof and at a radial distance from said walls for limiting the amplitudes of excursions of said central portion relative to said outer portion, the spacing of said stop members from each other being at least equal to the thickness of said outer portion.

4,469,317

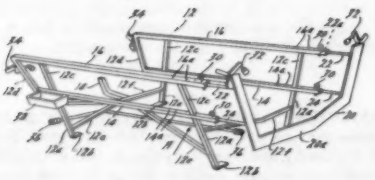
TRUCK BED COVER ASSEMBLY

Daniel Grote, Mt. Clemens; Duane Raymond, Warren, and Joseph C. Mosher, Rochester, all of Mich., assignors to Brahma, Inc., Arlington, Tex.

Division of Ser. No. 132,509, Mar. 21, 1980, Pat. No. 4,295,262, and a continuation of Ser. No. 282,807, Jul. 13, 1981, abandoned. This application Sep. 29, 1983, Ser. No. 536,826

Int. Cl.³ B23Q *1/04*

U.S. Cl. 269—69 **2 Claims**



1. An assembly for the production of a cover of preselected length for the bed of a truck, the cover having a preformed shell having the general configuration of the cover and a longitudinal dimension which is greater than the preselected length of the cover to be produced therefrom, the assembly comprising:

a support means comprising a plurality of spaced, substantially parallel, hollow channel members for receiving and maintaining the preformed shell in a fixed position,

adjustable guide means movably mounted on the support means, said guide means being provided with a plurality of spaced substantially parallel extension members adapted to be slidably engaged in the channel members of the support means so that the guide means is selectively movable along the longitudinal axis of the shell to demarcate the preselected length of the cover and the contours of the leading edge thereof, the guide means being pivotably mounted on the spaced extension members to enable the guide means to be positioned at a predetermined angle with relation to the preformed shell,

anchoring means for the guide means for maintaining the guide means in a fixed, predetermined position with relation to the preformed shell while the shell is being trimmed along the guide means to provide a shell having a preselected length,

clamp means provided on the support means for releasably securing the shell on the support means and

a plurality of downwardly extending legs to enable the support means to be self-supporting.

4,469,318

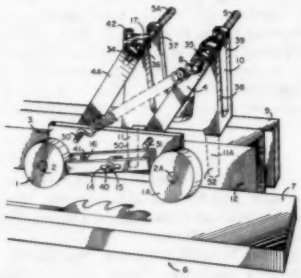
WORK PIECE GUIDE FOR TABLE SAWS AND THE LIKE

Fred M. Slavic, Fisher Hill, Fitzwilliam, N.H. 03447

Filed Apr. 22, 1982, Ser. No. 370,965

Int. Cl.³ B27B *27/02*

U.S. Cl. 269—91 **2 Claims**



1. A device for holding down a work piece to be operated on by a device such as a table saw, against a flat table member while at the same time urging said work piece against a guide fence used on such devices, comprising:

a plate member;

a pair of wheels rotatably mounted on said plate member with at least a portion of each wheel extending beyond said plate member;

a first and second arm member, each having an upper and lower end, the lower ends of which are rotatably mounted on said plate member on a line parallel to a line between said wheel members;

a frame member having a first and second shaft rotatably retained therein positioned apart from one another substantially the distance of the lower ends of said arms in a line parallel to the rotational mountings of said lower ends on which are affixed the upper ends of said first and second arms respectively;

a spring member extending from the upper end of said second arm member to the lower end of said first arm member;

an auxiliary guide fence having at least one aperture defined therein for positioning adjacent to said guide fence for mounting said frame to said guide fence with said wheels at an angle inward toward said guide fence in the direction of the flow of the work piece;

a pin affixed to the bottom of said frame adapted to enter into said auxiliary fence's aperture(s);

a downwardly protruding member extending from the bottom of said frame on the other side of said guide fence from said auxiliary fence;

a clamp screw extending through said downwardly protruding member for tightening against said guide fence to hold said frame to said guide fence;

means to prevent reverse movement of said wheel members comprising a pawl member pivotally affixed to said plate between said wheels; and

means to cause said pawl member to jam against said wheels upon rearward movement of same, including:

a horizontally extended aperture defined in said pawl in which said pivot member can move back and forth;

a vertically and horizontally extended aperture defined toward an end of said pawl;

a stop pin affixed to said frame and entering said vertically extended aperture;

said pawl adapted to extend on each end to rest on said wheels when they are in forward motion and when said wheels start rearward motion, said pawl is adapted to move by friction rearwardly, its pivot member moving in said horizontally extended aperture, forcing the ends of said pawl between the wheels and said stop pin preventing further rotational movement of said pawl beyond its contact with said wheels.

4,469,319

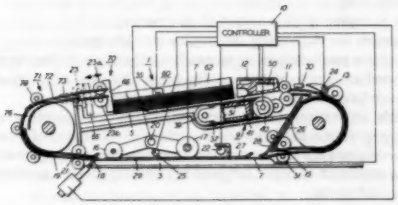
LARGE DOCUMENT RESTACKING SYSTEM

Frank J. Robb, Fairport, and Fred F. Wilczak, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1982, Ser. No. 443,801

Int. Cl.³ B65H *31/20*

U.S. Cl. 271—3.1 **11 Claims**



1. In a sheet stacking apparatus for stacking sheets in a sheet tray with stacking edge guide means for controlling the sheet stacking position, said stacking edge guide means being repositionable to accommodate stacking different normal sizes of sheets, said sheet stacking apparatus further including stacking feeding means for stacking the sheets in said tray within said stacking edge guide means by feeding each sheet in over the top of the stack from one edge thereof and releasing the sheet to stack, the improvement comprising:

automatically variable corrugation stacking means for controlled stacking of large flimsy sheets in said tray for subsequent feeding from the stack compatibly with stacking said normal sheet sizes within said same tray and stacking edge guide means,

wherein said stacking edge guide means are repositionable at said one edge in a direction opposite the feeding direction of said documents by said stacking feeding means sufficiently to accommodate said large document sheets,

and wherein said variable corrugation stacking means comprises plural repositionable variable sheet corrugating members operatively connecting with said repositionable stacking edge guide means to change the corrugation of large flimsy sheets being stacked in said tray in response to said repositioning of said stacking edge guide means for stacking said large flimsy sheets in said tray such that said large flimsy sheets being restacked are sufficiently differently corrugated from said normal sheets to reliably stack in the same said tray.

4,469,320

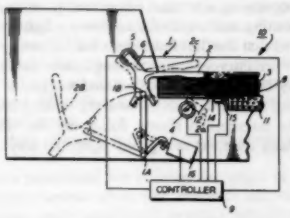
DUAL MODE STACK SENSOR

Stephen J. Wenthe, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 3, 1982, Ser. No. 373,919

Int. Cl.³ B65H *3/12, 3/48, 7/14*

U.S. Cl. 271—98 **7 Claims**



1. In a sheet feeder with a sheet stack support wherein sheets are fed from a stack of the sheets in said stack support using variable pneumatic feeding means, the improvement comprising an automatic integral plural mode sheet stack sensor which, in a first mode, controls said variable pneumatic feeding means in response to sensing the height of the stack of sheets in said stack support, and which, in a second mode, provides a signal indicative of the feeding from said stack support of all of the sheets in said stack, wherein said integral plural mode sheet stack sensor includes:

a finger member,

means for resetting said finger member on top of the stack of sheets,

first switch means actuable by a first position of said finger member said first mode when said finger member is reset on top of the stack of sheets and the height of said stack of sheets in said stack support exceeds a preset level,

and second switch means actuable for said second mode by the dropping of said finger member into a second position in response to all of the sheets being fed out from under said finger member.

4,469,321

DEVICE FOR THE DELAYED PILING OF SHEETS

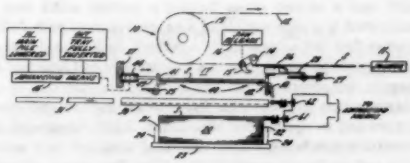
Herbert Geschwindner, Wachtersbach, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,191

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3112558

Int. Cl.³ B65H *29/68, 31/12*

U.S. Cl. 271—183 **6 Claims**



1. In a delivery mechanism of a sheet-fed printing press, a frame defining a delivery staion having a pile board, a chain-type conveyor having grippers for gripping the leading edges of sheets for conveyance seriatim to the delivery station, means for automatically releasing the sheets at the delivery station with the released sheets settling downwardly through a receiving space under the force of gravity to form a pile, a horizontal rail type tray support straddling the receiving space, a temporary receiving tray insertable into the tray support for tempo-

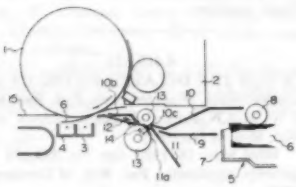
rarily collecting the downwardly settling sheets when a filled pile board is lowered for removal and replacement by an empty pile board, and a buffer storage device located immediately above the tray support for intercepting the sheets entering the receiving space when the pile board is lowered, the buffer storage device including a front edge support for supporting the front edge of a sheet and a rear edge support for supporting the rear edge of the sheet, at least the rear edge support occupying a normal horizontal position but having a hinge mounting and means for applying a light counterbalancing force so that the first few sheets fed following the lowering of the pile are intercepted providing a time delay for insertion of the tray but with the accumulated weight of the first few sheets being sufficient to overcome the counterbalancing force so that the intercepted sheets, following the time delay, are automatically dumped as a group upon the tray.

4,469,322

PAPER GUIDE DEVICE OF ELECTROPHOTOGRAPHY COPYING MACHINE

Yoshio Kogure, and Satoru Komiya, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1982, Ser. No. 390,599
Claims priority, application Japan, Oct. 15, 1981, 56-163412
Int. Cl.³ B65H *5/38*
U.S. Cl. 271—264 **3 Claims**



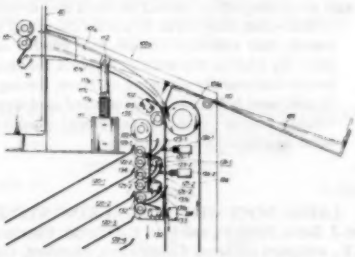
1. In a paper guide device for an electrophotographic copying machine of the type wherein a first paper having a first width and a second paper having a second width may be transported to a receptor along a paper transport path defined between first and second guide members, each of said first and second guide members having a downstream end adjacent said receptor, the improvement characterized in that one of said guide members includes at its downstream end first and second portions and an open-ended bifurcation slot therebetween, said bifurcation slot being larger than said width of said second paper and smaller than said width of said first paper, whereby, when said first paper contacts said receptor and is urged against said one of said guide members said first and second portions retain said first paper within said paper transport path defined between said first and second guide members, and when said second paper contacts said receptor and at least a portion of said second paper is urged in the direction of said one of said guide members, said portion of said second paper is permitted to extend through said bifurcation slot outside of said path defined between said first and second guide members.

4,469,323

COLLATOR WITH COLLATE MODE, NON-COLLATE MODE AND JOB SEPARATION MODE

Kiyoshi Miyashita; Muneo Kasuga; Akira Shimizu, all of Hachioji; Fumitaka Ozeki, Inagi; Hiroshi Tsuda, Mitaka; Katsuhiko Kimura, Hino; Nobuoto Hattori, Hachioji; Norio Amemiya, Hachioji, and Masaru Yamazaki, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,375
Claims priority, application Japan, Jul. 31, 1980, 55-105439
Int. Cl.³ B65H *31/24, 29/60*
U.S. Cl. 271—288 **7 Claims**



1. A collator for use in combination with an apparatus such as a copying machine, a printing machine and the like which discharges a plurality of copies in succession, said collator comprising:

a plurality of bins arranged as a series;

means for delivering the copies into the bins;

collate mode selecting means for selecting a collate mode in which each of the copies of a plurality of originals is delivered into respective bins successively;

job separation mode selecting means for selecting a job separation mode in which a plurality of copies of a certain original are delivered into a certain bin and a plurality of copies of another original are delivered into another bin and so on;

non-collate mode selecting means for selecting a non-collate mode in which all copies are delivered into a given bin or an extra tray;

means for reserving any one of the collate, job separation and non-collate modes in response to actuation of the selecting means corresponding to the mode to be reserved, while any one of the remaining modes is executed; and

means for automatically changing the collator into the reserved mode at a timing near the end of an operation under said executed mode, wherein each of said selecting means comprises an indicating device that is driven into a first condition for indicating that the relevant mode is executed, a second condition for indicating that the relevant mode is reserved and a third condition for indicating that the relevant mode is neither executed nor reserved.

4,469,324

METHOD AND APPARATUS FOR INCREASING A SPRINTER'S SPEED

John O. Dolan, 2901 Barrow Pl., Midlothian, Va. 23113

Filed Jun. 9, 1982, Ser. No. 386,763
Int. Cl.³ A63B *69/00*
U.S. Cl. 272—70 **8 Claims**

1. A method for increasing a sprinter's speed in running a course on the ground from a starting line to a finish line, said method comprising:

(a) paying out a tow line along the length of the course that is to be run by the sprinter;

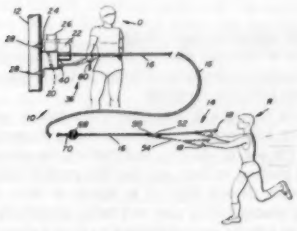
(b) mounting a reeling-in mechanism at a fixed location beyond the finish line end of the course and securing one

end of the tow line to the reeling-in mechanism, the reeling-in mechanism comprises a motorized reel having a kill switch past which the tow line is payed-out;

(c) frictionally sliding a kill switch actuator along the payed-out tow line toward the reeling-in mechanism to predetermine a point at which the motorized reel is to lose power;

(d) providing a secondary tow line having respective voluntary handholds mounted to two opposite ends thereof;

(e) adjustably connecting the first mentioned tow line at the opposite end thereof to said secondary tow line intermediate said handles, so that said secondary tow line is divided into two portions which may be alternatively reversibly lengthened at the expense of one another by a sprinter holding a respective one of said handholds in each hand and alternately pulling more with one hand than with the other;



(f) having the sprinter voluntarily, releasably grasp the respective handholds of said secondary rope in his or her respective hands; and

(g) simultaneously,

(i) starting the sprinter running along the course, and

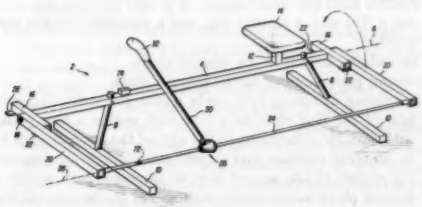
(ii) operating the reeling-in mechanism to reel-in the tow line at a speed which is at least equal to the speed at which the sprinter is running along the course and which is, during at least part of the time that the sprinter is running along the course, a speed that is faster than the maximum speed which the sprinter is then accustomed to running when unaided, so that as the sprinter runs toward the finish line and the tow rope is reeled-in if the sprinter does not voluntarily release the handholds or the power to the motorized reel is not manually cut, as the kill switch actuator engages the kill switch, power to the motorized reel is cut, preventing the runner from being drawn into the motorized reel.

4,469,325

EXERCISE MACHINE

Maximilian Ware, Rapidan, Va., assignor to Maxcraft, Winona, Md.

Filed Mar. 4, 1982, Ser. No. 354,660
Int. Cl.³ A63B *69/06*; G01L *5/02*
U.S. Cl. 272—72 **11 Claims**



1. An exercise machine comprising:

an elongate frame defining a horizontal axis and a vertical plane containing said axis;

support means having one end rotatably connected adjacent each said axial end of said frame for rotation about said axis, and having a second end;

substantially linear guide means connected to said support means adjacent said second ends and extending between said support means;

connecting means mounted on said guide means for movement in two directional senses along said guide means, said connecting means including means for imparting a first resistant force to movement of said connecting means in a first said directional sense and for imparting a second resistant force, smaller than said first resistant force, to movement of said connecting means in a second said directional sense;

a paddle shaft pivotally mounted on said connecting means; and

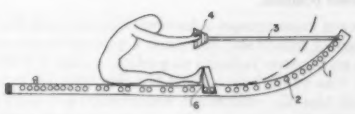
stop means positioned for limiting the angle of rotation of said support means about said axis such that said connecting means can be positioned on either side of said vertical plane.

4,469,326

DEVICE FOR YOGA EXERCISING

Abram Gin, 99-40 63 Rd., Forest Hills, N.Y. 11375

Division of Ser. No. 851,624, Nov. 15, 1977, Pat. No. 4,307,880.
This application Dec. 15, 1981, Ser. No. 330,849
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—134 **8 Claims**



1. A Yoga exercising device, comprising an elongated resiliently deformable element means having one portion movable to a position in which said one portion is convex but tends to become straight under the action of its resiliency, and another portion on which a practioner can rest; and holding means by which a practitioner holds said one portion of said resiliently deformable element means in its convex position so as to prevent said one portion from becoming straight whereby said one convex portion acts upon the practitioner's body so as to bend the latter, said holding means including an elongated holding element means having a first end section arranged to be held by a practitioner, and a second end section arranged to be detachably connected with said resiliently deformable element means in one of a plurality of locations spaced from one another in the direction of elongation of the latter.

4,469,327

AMUSEMENT GAME DEVICE

Hans Ulrich, Wuppertal, Fed. Rep. of Germany; Fred D. Eddins, Mapleville, R.I.; Tormod K. Reinertsen, Rehoboth, Mass.; Steven R. D'Aguanno, Greenville, and Americo D'Ambra, Jr., Johnston, both of R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed Mar. 15, 1982, Ser. No. 358,511
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—1 GG **7 Claims**

1. An amusement game device comprising:

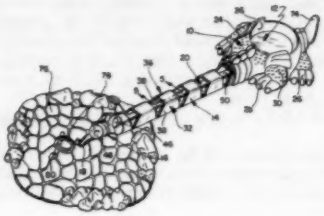
a. a plurality of ring-like game elements having cross bars or the like thereon for preventing said game elements from lying flat on a support surface;

b. an open dish member positionable on said supporting surface;

c. an elongated flexible neck member attached to said dish member;

d. means for remotely manipulating said neck member to move it between a substantially straight outwardly extended position and an upwardly and rearwardly curled position wherein the terminal end of said neck member is above said open dish member; and

e. hook means attached to the terminal end of said neck member receivable in said ring-like game elements for securing same therewith, by moving said dish member on



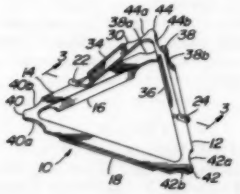
said supporting surface and manipulating said neck member manipulating means, when said neck member is substantially in said outwardly extended position and said game elements are disposed adjacent the terminal end of said neck member, whereupon said hook means is operable for moving said game elements to said dish member by manipulating said neck member manipulating means to move said neck member to said upwardly and rearwardly curled position.

4,469,328

APPARATUS FOR RACKING BILLIARD BALLS

Thomas G. Pacitti, 220 Mountain St., Philadelphia, Pa. 19148

Filed Mar. 28, 1983, Ser. No. 479,166
Int. Cl.³ A63D *15/00*
U.S. Cl. 273—22 **6 Claims**



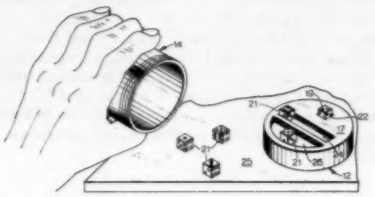
1. Apparatus for use in racking balls for one or more different billiard games comprising a substantially equilateral triangular member with elliptical indentations in the external surface and at each of its apices having a hinge located one half the distance from an apex along adjacent sides of the triangular member for supporting a bilateral member adaptable for rotational movement about the hinges, said bilateral member being movable from a first position overlying the apex of the triangular member in substantial parallel relation thereto to a second position where the apex of the bilateral member is supported by the non-adjacent side of the triangular member also in substantial parallel relation thereto.

4,469,329

SELF CONTAINED GAME

Reynolds W. Guyer, 33 E. Wentworth Ave., Suite 345, St. Paul, Minn. 55118

Filed May 28, 1982, Ser. No. 383,013
Int. Cl.³ A63F *9/04*
U.S. Cl. 273—146 **10 Claims**



1. A game apparatus comprising:

a plurality of dice-like playing pieces, each dice-like playing piece having a plurality of faces, and each face bearing a different indicium thereon;

a container having a first portion and a tubular second portion, the tubular second portion being formed in a cup shape for use in shaking and casting the playing pieces upon a playing surface, and the first portion having a least one recess therein formed to retain at least one of the playing pieces during play and being selectively securable upon the tubular second portion to form a closed chamber for storing the playing pieces; and

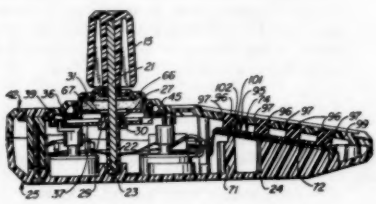
a visible scoring chart which is used to determine a player's score for a turn, depending upon the indicia displayed on the playing pieces, and the scoring chart being on an outer surface of the tubular second portion of the container.

4,469,330

CONTROLLER UNIT FOR VIDEO GAME

James C. Asher, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Jan. 7, 1982, Ser. No. 337,881
Int. Cl.³ G06F *3/02*
U.S. Cl. 273—148 B **20 Claims**



18. An analog joystick controller comprising:

a housing;

a control shaft movably supported in said housing and having a first end, a second end, and a centrally located ball portion;

a first plate coupled to the control shaft;

a second plate coupled to the control shaft;

the housing including first guide means for restricting motion of the first plate to a first path within a first plane substantially orthogonal to the axis of the control shaft in its centered position, and second guide means for restricting motion of the second plate to a second path within a second plane substantially orthogonal to the axis of the control shaft in its centered position, the second path being substantially perpendicular to the first path;

first analog means for providing a first analog impedance

corresponding to the position of the first plate relative to the housing;

second analog means for providing a second analog impedance corresponding to the position of the second plate relative to the housing;

a pivot mounted to the housing wherein the first end of the control shaft is pivotally coupled to the pivot, and the first and second plates are coupled to the control shaft at positions intermediate the ends of the control shaft;

wherein the first plate further comprises a first generally elongated aperture for coupling motion of the control shaft in the first path to motion of the first plate and for not coupling motion of the control shaft in the second path to the first plate, the first generally elongated aperture having its elongated dimension along the second path; and wherein the second plate further comprises a second generally elongated aperture for coupling motion of the control shaft in the second path to motion of the second plate and for not coupling motion of the control shaft in the first path to the second plate, the second generally elongated aperture having its elongated dimension along the first path; and

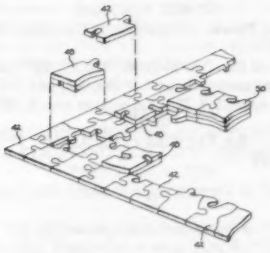
a slide block rotatably secured to the centrally located ball portion, the slide block being slideably received within the first and second generally elongated apertures for movement relative to the first plate along the long axis of the first aperture and relative to the second plate along the long axis of the second aperture.

4,469,331

THREE DIMENSIONAL JIGSAW PUZZLE

James K. Rinker, 618 N. Orange Dr., Los Angeles, Calif. 90036

Filed Sep. 29, 1982, Ser. No. 426,870
Int. Cl.³ A63F *9/12*
U.S. Cl. 273—157 R **3 Claims**



1. A self-supporting, three dimensional jigsaw puzzle, comprising:

a plurality of first puzzle pieces having a first layer thickness;

a plurality of second puzzle pieces having a two layer thickness substantially twice the thickness of said first layer thickness;

a plurality of third puzzle pieces having a three layer thickness substantially three times the thickness of said first puzzle pieces;

said puzzle pieces being shaped to have interlocking portions, such that each of said pieces interlocks with at least one selected other of said pieces;

said second and third pieces each having separate and distinct ones of said interlocking portions disposed at two and three vertically disposed planar layers, respectively, such that said second and third pieces interlock with adjacent pieces at two and three layers of the puzzle, respectively, thereby rigidly coupling the adjacent layers and supporting the entire puzzle;

said first, second and third pieces being coupled to one another in a predetermined combination in order to provide a plurality of planar and concentric layers having differing surface areas;

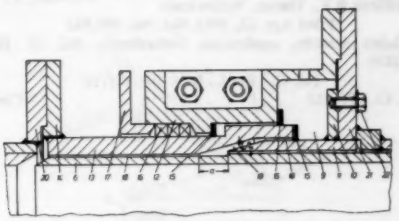
whereby a self-supporting three dimensional puzzle having multiple layers is provided by combining and interlocking said single and multi-layered pieces in a predetermined configuration.

4,469,332

SEAL FOR A TUBULAR MILL

Hubert Brosdetzko; Wolfgang Gerster, both of Oberhausen, and Klaus Müller, Dorsten, all of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 423,200
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138839
Int. Cl.³ B02C *17/18*; F16J *15/40*
U.S. Cl. 277—12 **6 Claims**



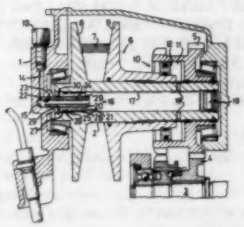
1. A seal for a tube mill operated at superpressure in a milling chamber and comprising: a drum with side hollow journals and having sliding seals; a blocking air chamber arranged on a fixed member of the tube mill and being sealed off by said sliding seals relative to a rotating part of the tube mill; said blocking air chamber communicating with said milling chamber by a blocking air channel extending between stationary and rotating parts of the tube mill; said blocking air chamber having a section extending at an acute angle to the longitudinal axis of the tube mill.

4,469,333

SEALING DEVICE IN A TRANSMISSION WITH PRESSURE-MEDIUM CONTROLLED, CONTINUOUSLY VARIABLE GEAR RATIO

Heinrich A. Schlicker, Bengtsfors, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Nov. 18, 1982, Ser. No. 442,796
Claims priority, application Sweden, Nov. 24, 1981, 8106981
Int. Cl.³ F16L *27/08*
U.S. Cl. 277—12 **6 Claims**



1. Sealing device, preferably in a transmission with pressure-medium controlled, continuously variable gear ratio, for sealing a pressure medium connection between a channel in the transmission housing and a central, axial bore in a shaft rotatably journalled in the housing, e.g. a shaft carrying a pulley

consisting of a pair of disc members, the spacing between them being variable by means of a piston-cylinder device which has a cylinder chamber communicating with the shaft bore, said sealing device comprising an inner sleeve extending into the house channel and into the shaft bore, and an outer sleeve slide-journalled on the inner sleeve and extending into the shaft bore, characterized in that the outer sleeve has a guide portion which has a small play against the wall of the shaft bore and which has an axial extent substantially less than the length of the axial bore in said sleeve, in which bore the inner sleeve is journalled, and in that sealing rings are arranged between the shaft bore and the portion of the outer sleeve in contact therewith, and between the channel in the housing and the portion of the inner sleeve extending into said channel.

4,469,334

SEALING SYSTEM FOR THE AIR CUSHION OF AN AIR-CUSHION VESSEL

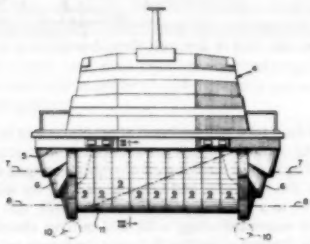
Adolf Le Comte, New Rochelle, N.Y., assignor to Le-Comte Holland B.V., Vianen, Netherlands

Filed Apr. 13, 1983, Ser. No. 484,563

Claims priority, application Netherlands, Jul. 13, 1982, 8202838

Int. Cl.³ F16J 15/16; B60V 1/16

U.S. Cl. 277—12 **7 Claims**



1. A sealing system for the air cushion of an air-cushioned vessel comprising rigid sidewalls designed as buoyant bodies, and at least at the front between said rigid sidewalls a series of adjacent, interconnected elements sealing the air cushion comprising a voluminous rigid body having one end hingably connected to the bottom of said air-cushioned vessel, wherein each rigid body is provided at the side facing the adjoining bodies with means for limiting the free hinging movement relative to the two adjoining bodies, said means comprise a projection disposed on a sidewall of each body, which projection extends into a recess in the sidewall of the adjacent body and is movable in said recess with a limited stroke.

4,469,335

SEALING APPARATUS WITH SEALING DEVICE OPERABLE UNDER PRESSURE DIFFERENTIAL ESTABLISHED THEREACROSS

Vincent Moore, Mercer Island, Wash., assignor to American Sterilizer Company, Erie, Pa.

Filed Jul. 22, 1982, Ser. No. 400,727

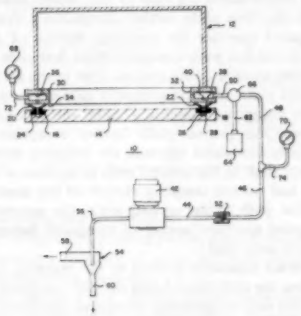
Int. Cl.³ F16J 15/46

U.S. Cl. 277—27 **2 Claims**

1. In apparatus for sealing the opening of a chamber, which has apparatus for evacuating the chamber, against the flow of fluid to and from the chamber, said apparatus being of the type including a door which can be placed in a closed position in which it confronts the chamber opening and a sealing device which is in contact with the chamber and said door to seal the chamber opening when said door is in its closed position and a pressure differential is established across said sealing device, said sealing device having a flexible portion which is adapted to assume an engaged position in which it is in contact with the chamber and said door and in which it is seated to cooperate with the chamber and said door to define an enclosed space, the improvement comprising:

a second chamber which can be placed in fluid communication with said enclosed space;

said flexible portion being so adapted as to be unseated by fluid flowing from said second chamber into the chamber when the pressure within said second chamber is greater



by a predetermined amount than the pressure within the chamber to permit the evacuating apparatus of the chamber to evacuate said second chamber to an extent sufficient to substantially equalize the pressure in said chambers; and

means for placing said second chamber in fluid communication with said enclosed space to permit said second chamber to evacuate said enclosed space when said second chamber is evacuated to a predetermined extent.

4,469,336

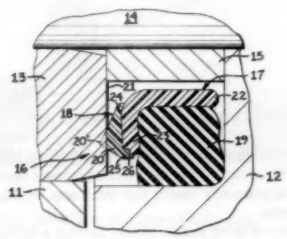
TRACK PIN SEAL

Terry D. Linne, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 846,006, Oct. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 667,769, Mar. 17, 1976, Pat. No. 4,066,269. This application Aug. 9, 1979, Ser. No. 65,027

Int. Cl.³ F16J 15/32, 15/34

U.S. Cl. 277—92 **3 Claims**



1. A unitary seal (16) connected between two relatively rotatable members (12,13) comprising:

an annular support section (17) having an annular radially outwardly extending portion (23) and being formed of a high modulus rigid polycarbonate plastic; and

an annular sealing section (18) formed of a flexible polyurethane elastomer, the support section (17) and the sealing section (18) being directly bonded together without the use of an adhesive therebetween, and the sealing section (18) being at least substantially disposed on one side of the support section (17) and having an annular lip (20) extending from the one side and generally axially away from the

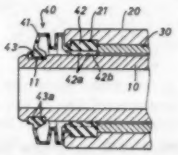
radially outwardly extending portion (23), the lip (20) being adapted for sealing engagement with one of the members (12,13).

4,469,337

SEALING BOOT OF ELASTOMERIC MATERIAL

Masatada Yokoi, Toyota; Toshio Kondo, Okazaki; Masayoshi Katagiri, Toyota; Tetsuo Kaisaku, Kounan, and Yoji Mizuno, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya; Toyota Jidosha Kabushiki Kaisha, Toyota and Toyoda Gosei Kabushiki Kaisha, Aichi, all of, Japan

Filed Mar. 14, 1983, Ser. No. 475,232
Claims priority, application Japan, Mar. 19, 1982, 57-39941[U]
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—212 FB 2 Claims



1. In a sealing boot of elastomeric material for hermetically enclosing an annular opening between support and movable members in relatively reciprocable relationship, said sealing boot including a tubular bellows which is integrally formed at the opposite ends thereof with a pair of cylindrical sealing sleeve portions respectively attached to said support and movable members, and one of the cylindrical sealing sleeve portions being connected substantially at its center to one end of said tubular bellows;

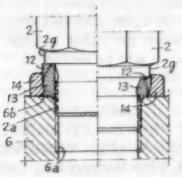
the improvement wherein the said one of the cylindrical sealing sleeve portions is formed at its inner end shoulder with an annular thick wall tapering radially toward the inner wall of said tubular bellows.

4,469,338

GASKET DISPOSED BETWEEN AN APPARATUS AND A THREADED COUPLING FOR PIPE CONVEYING HIGH PRESSURE FLUID

André Legris, Saint-Maur, France, assignor to Legris, Rennes, France

Filed Mar. 18, 1983, Ser. No. 476,491
Claims priority, application France, Apr. 8, 1982, 82 06187
Int. Cl.³ F16L *15/04;* F16J *15/08*
U.S. Cl. 277—236 16 Claims



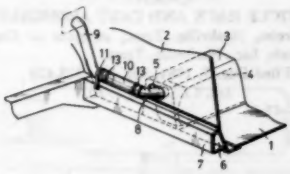
1. In a gasket disposed between a coupling for pipes in which high pressure fluid circulates and an apparatus presenting a tapped hole in which the threaded part of the coupling is screwed, the gasket comprises a hoop made of hard, resistant material, being by one of its two faces against the wall of the apparatus and presenting a bore in which are engaged, around the coupling, a sealing member made of creepable, malleable material and a ring to be crimped, made of ductile material having the form of a wedge in cross section, said ring being crimped inside the hoop during screwing of the coupling, so as to constitute a tight annular enclosure of variable volume in which is compressed the seal member which fills the annular space by creeping whilst the coupling is being screwed, said annular enclosure being defined by the coupling, the crimped ring, the hoop and the face of the apparatus of which the points of contact constitute means preventing extrusion of the seal member, said hoop and said ring to be crimped being connected by means arranged on the gasket.

4,469,339

FUEL TANK CONSTRUCTION OF MOTOR VEHICLE

Hiroyuki Watanabe, and Yasushi Tanaka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 14, 1982, Ser. No. 388,426
Claims priority, application Japan, Jun. 12, 1981, 56-86606[U]
Int. Cl.³ B60K *15/04*
U.S. Cl. 280—5 A 4 Claims



1. A motor vehicle fuel tank structure comprising:

a motor vehicle floor panel having a length and width and configured to have a tunnel extending the length of the floor panel at a position substantially in the center of said width, said tunnel having an upper portion extending above the floor panel and said floor panel normally positioned to have its width and length span a width and length of a vehicle, respectively;

a vehicle back panel coupled to said floor panel and having an opening communicating with the upper portion of said tunnel;

a cross member extending along the width of said floor panel adjacent to said back panel at a position below said opening;

a fuel tank disposed in said tunnel and having an inlet pipe extending from said tunnel through said opening and shaped to extend a distance above said cross member;

a fuel inlet pipe generally positioned in the side of a vehicle; and

a hose coupled between said fuel inlet pipe and the inlet pipe of said fuel tank.

4,469,340

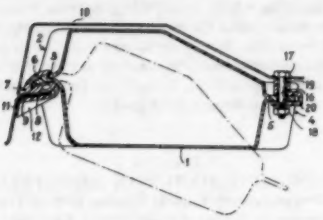
DEVICE FOR FIXING A TANK ON A SUPPORT STRUCTURE

Claude Condet, Montesson, France, assignor to Societe dite: Automobiles Peugeot and Societe dite: Automobiles Citroen, both of, France

Filed Sep. 17, 1982, Ser. No. 419,315
Claims priority, application France, Oct. 16, 1981, 81 19472
Int. Cl.³ B60K *15/02*
U.S. Cl. 280—5 A 8 Claims

1. A device for fixing a tank to a supporting structure and in particular a fuel tank on the structure of an automobile vehicle, said device comprising, on a first side of the tank, a substantially planar ear which defines an aperture for receiving a screwthreaded element for holding the tank fast to the structure, the device further comprising, on a second side of the tank opposed to said first side, a substantially curved ear which

has a concavity facing away from the structure, and a clip mounted on said structure and defining an arcuate slot substan-



tially conforming to said curved ear, the curved ear being slidably received in said arcuate slot.

4,469,341

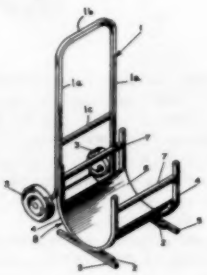
ARTICLE RACK AND CART ASSEMBLY

James M. Creim, Nashville, Tenn., assignor to Cumberland Valley Metals, Inc., Nashville, Tenn.

Filed Dec. 7, 1981, Ser. No. 328,429

Int. Cl.³ B62B *1/16*

U.S. Cl. 280—47.26 **1 Claim**



1. An article rack and cart assembly adapted to receive and carry articles, said assembly comprising:

(a) a cart having a pair of upright members, each upright member including an upper and a lower portion, a handle member interconnecting said upper portions of said upright members, a pair of wheels rotatably secured to respective of said lower portions of said upright members, and a pair of arms extending from said lower portions of said upright members respectively in a substantially parallel relationship to each other; and

(b) an article rack adapted to be detachably coupled to said cart and having a pair of U-shaped support members, an article support surface of a configuration and disposed between said support members to receive the articles, and a pair of support legs each secured to a bight portion of its U-shaped support member, said support legs disposed in a substantially parallel relationship with and spaced a distance from each other to facilitate the guiding of said arms therebetween as said cart is coupled with said article rack and, upon assembly together, ensure substantial contact between said respective legs and arms to ensure the stability of said rack as it is transported by said cart, each of said arms of said cart has a curved surface of substantially the same configuration as that of said article support surface, whereby upon coupling of said cart and said rack, said article support surface engages in intimate fashion said curved portions of said arms.

4,469,342

ROTARY VALVE FOR A POWER ASSISTED STEERING MECHANISM

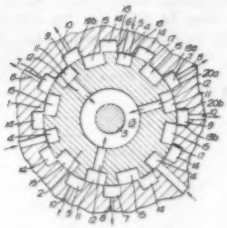
Barry J. Millard, Reading, England, assignor to Adwest Engineering Limited, Reading, England

Filed Dec. 30, 1982, Ser. No. 454,541

Claims priority, application United Kingdom, Dec. 31, 1981, 8139142

Int. Cl.³ B62D *5/08*

U.S. Cl. 280—148 **10 Claims**



10. A power-assisted rack-and-pinion steering mechanism for a motor vehicle, comprising a toothed rack, a pinion in meshing engagement with the toothed rack for imparting longitudinal movement to the toothed rack, at least one end of the toothed rack being connectable to the steerable road wheels of a vehicle to impart steering thereto, double-acting piston-and-cylinder means operatively associated with the toothed rack and a closed centre rotary valve for directing fluid under pressure from a source thereof to one side or the other of said double-acting piston-and-cylinder means, said pinion being connectable to the steering control of a motor vehicle by way of said rotary valve, said rotary valve comprising cooperating relatively rotatable sleeve and core members having cooperating axially-extending grooves therein and means relatively biassing said members towards a neutral position, said grooves comprising at least one inlet groove connectable to said source of fluid under pressure, a cylinder groove angularly spaced from said inlet groove on each side thereof and connectable to opposite sides of said double-acting piston-and-cylinder means, and a return groove in overlapping relation with each of said cylinder grooves in the neutral position of the valve and connectable to a reservoir for the fluid under pressure, said inlet groove being closed from communication with the cylinder and return grooves in the neutral position of the valve, the arrangement being such that on relative angular displacement of said members in either direction from the neutral position the inlet groove will be placed in communication with one of said cylinder grooves, said one cylinder groove and its associated return groove will move out of their overlapping relation to close communication therebetween, and the overlap between the other cylinder groove and its associated return groove will be increased.

4,469,343

OCCUPANT PROPELLED MULTI-SPEED THREE-WHEEL VEHICLE

Hugh A. Weatherford, 1216 Rodgers Dr., Tarboro, N.C. 27886

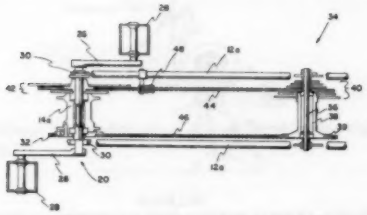
Filed Dec. 23, 1982, Ser. No. 432,335

Int. Cl.³ B62K *5/02*

U.S. Cl. 280—261 **8 Claims**

1. A three-wheel vehicle comprising: a main frame structure; a front wheel rotatively mounted about a transverse axis to the front of said frame structure; a pair of laterally spaced rear steerable wheels mounted to the rear of said frame structure; seat means mounted to said frame structure intermediately between said front and rear wheels; steering means operatively associated with said rear wheels for imparting a steering movement thereto such that said three-wheel vehicle may be steered

by said rear wheels; foot pedal means disposed about opposite sides of [illegible] wheel and including a drive shaft rotatively journale[illegible]ng a transverse axis of said front wheel and rotatable independently of said front wheel; a rotatively mounted jack shaft disposed between said front wheel and said rear wheels and including an input side and an output side; first drive means operatively interconnected between said pedal means and said input side of said jack shaft for driving said jack



shaft in response to said pedal means being rotatively turned about the transverse axis of said front wheel; multi-speed gear means associated with said jack shaft for driving the same at a selected speed relative to the rotational speed of said pedal means; and second drive means operatively interconnected between said output side of said jack shaft and said front wheel for driving said front wheel in response to the output side of said jack shaft being driven.

4,469,344

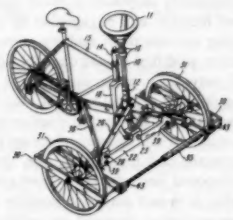
TILTABLE THREE-WHEELED VEHICLE

Stanley F. Coil, 1610 Lindsey Ave., Miamisburg, Ohio 45342

Filed Sep. 27, 1982, Ser. No. 424,156

Int. Cl.³ B62K *5/08*

U.S. Cl. 280—269 **32 Claims**



25. An assembly for converting a two-wheeled type motorcycle with the front wheel removed to a three-wheeled vehicle particularly employing the original frame and rear driven wheel and for effecting front wheel turning and frame inclination, said assembly comprising:

first and second laterally spaced front wheels, each having a wheel mounting support pivotally connected to a front axle and pivotally connected to each other with an adjustable connector means;

cross structure, having a Y-shaped member adapted to be posteriorly and pivotally connected to said frame and anteriorly and rigidly connected to said front axle and for translating frame inclination into front wheel turning an L-shaped cross member adapted to be rigidly connected to the front fork of said frame and pivotally connected to said front axle;

steering means, having a steering shaft with a lower portion rigidly connected with an integrally constructed spiral track and with an upper portion slidably connected with said spiral track and said spiral track adapted to be rotatably supported by said frame and said L-shaped cross member with said L-shaped cross member pivotally connected to an adjustable connector means pivotally connected to one of said wheel mounting supports, for turning said front wheels in unison about axes perpendicular to the spin axes of the front wheels; and

tilting means, having spiral tracking means responsive to the rotational movements of said steering means with said tracking means pivotally connected to said front axle, for tilting said frame about an axes parallel to the ground whereby the amount of frame tilting is a function of the amount of front wheel turning.

4,469,345

LOCKABLE SAFETY-CONTAINER FOR TWO-WHEELERS

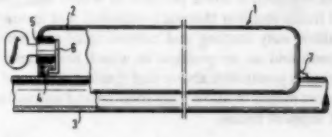
Heinz Weiss, Düsseldorfer Str. 103, D-4 Düsseldorf, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,643

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 8123974[U]; Aug. 20, 1981, 8124288[U]; Jan. 30, 1982, 8202372[U]

Int. Cl.³ B62J *9/00*

U.S. Cl. 280—289 A **19 Claims**



1. A lockable safety-container for bicycles adapted to be mounted on an elongated bar-like frame member of the bicycle and comprising:

a first container member (**11**) at least partially encompassing the frame member (**13**) and provided with a locking member (**15**) adapted to engage a locking means (**14**) disposed on a shell-like second container member (**12**) mateable with said first container member along abutting edges to form said container, said locking member and means retaining said first and second container members in a predetermined relative position when locked, said abutting edges having means (**16, 17**) mutually engageable by the movement of the edges toward and along each other to said predetermined position to lock the first and second container members together.

4,469,346

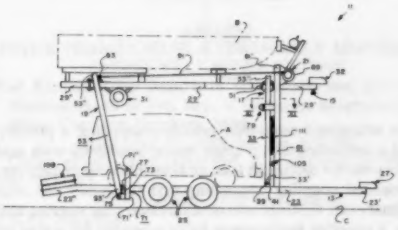
DUAL LOAD TRAILER

Virgil T. Low, Rte. 2, Box 128, Piggott, Ark. 72454

Filed Feb. 25, 1983, Ser. No. 469,963

Int. Cl.³ B60P *3/08*

U.S. Cl. 280—414.1 **8 Claims**



1. A trailer comprising:

(a) a first support means for supporting a first load, said first support means including a frame member for receiving

said first load and ground engaging wheel means for rollably supporting said frame members, said frame members having a front end and a rear end;

(b) a second support means for supporting a second load, said support means including a frame member for receiving said second load, said frame member having a front end and a rear end;

(c) a first bracket means having a first end for being pivotally attached to said frame member of said first support means substantially adjacent said front end thereof and having a second end for being pivotally attached to said frame member of said second support means substantially adjacent said front end thereof;

(d) a second bracket means having a first end for being pivotally attached to said frame member of said first support means substantially adjacent said rear end thereof and having a second end for being pivotally attached to said frame member of said second support means substantially adjacent said rear end thereof, said second bracket means being pivotally attached to said frame member of said first support means at a lower point than said first bracket means: and

(e) winch means for causing said second support means to pivot between a down position in which said rear end of said frame member thereof is adjacent said ground surface to allow easy loading and unloading of said second load thereon and an up position in which said frame member thereof is positioned above said frame member of said first support means to allow easy loading and unloading of said first support means.

4,469,347

ARTICULATED MULTIAXLE VEHICLE

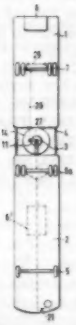
Kurt Gier, Backnang, Fed. Rep. of Germany, assignor to Robert Schenk GmbH & Co. KG, Bissingen, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 294,060

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031862

Int. Cl.³ B62D *53/08*

U.S. Cl. 280—432 **5 Claims**



1. An articulated multi-axle vehicle comprising a primary car and a secondary car, a drive motor associated with said secondary car for driving at least an axle of said secondary car, an articulated coupling connecting said secondary car with said primary car, the front axle of said primary car steering said vehicle, a coupling brake means being provided for acting on the articulated coupling exclusively as a function of a jackknifing angle between the primary and the secondary car, with the braking force of said brake means intensifying with increasing jackknifing angles.

4,469,348

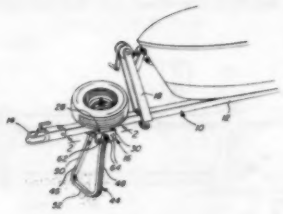
TRAILER TONGUE STAND

Richard D. Crook, 207 Edward St., Tallahasee, Fla. 32304

Filed Apr. 1, 1983, Ser. No. 481,393

Int. Cl.³ B60D *1/14*

U.S. Cl. 280—475 **7 Claims**



1. A trailer tongue stand including a downwardly opening inverted channel for mounting to the underside of a trailer tongue rearwardly of a hitch assembly carried by the front end of the tongue and with the channel extending longitudinally of the tongue, said channel including depending opposite side flanges interconnected along their upper marginal edges by a bight position extending therebetween, a generally U-shaped leg assembly including a pair of upright legs interconnected at their lower ends by a horizontal cross piece, first and second pivot means pivotally supporting the upper ends of first and second legs of said leg assembly from the exteriors of the upper portions of first and second side flanges of said channel, respectively, for angular displacement of said leg assembly relative to said channel about at least substantially aligned axes between an extended position with said leg assembly projecting downwardly from said channel and a retracted position with said leg assembly swung rearwardly and upwardly to a rearwardly projecting horizontally disposed position, stop means carried by said channel member and engageable by said leg assembly to limit swinging movement of said leg assembly toward said extended position, said first of said channel side flanges including a pair of outwardly projecting dimple means, said leg assembly being stiff but slightly resilient, said first pivot means including means allowing outward displacement of said first leg relative to said first side flange and means yieldingly biasing said first leg toward said first side flange, one of said dimple means being disposed immediately behind said one leg when said leg assembly is in said extended position and the other of said dimple means being disposed immediately beneath said one leg when said one leg assembly is in said retracted position.

4,469,349

STABILIZER

Makoto Tomita, Chiba; Tadanori Tanaka, Yachiyo, and Toshikazu Ebata, Funabashi, all of Japan, assignors to Horikiri Spring Manufacturing Co., Ltd., Chiba, Japan

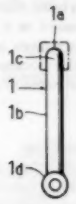
Filed Feb. 23, 1983, Ser. No. 469,026

Int. Cl.³ B60G *21/02*

U.S. Cl. 280—665 **7 Claims**

1. A stabilizer having a base for receiving a torsion moment, arms for connection to a load, shoulders connecting the base to each of the arms and eye-terminations provided on the respective ends of the arms to connect the stabilizer to a load, said stabilizer comprising a weld provided at each of the arms and connecting each of the arms integrally thereat to the base said weld being located in a region between each of the eye-terminations and a position on each of the arms where a ratio be-

tween the bend-fatigue strength of the material forming the stabilizer and that of the weld is approximately equal with a



ratio between the bending stress of each shoulder and that of the weld.

4,469,350

FRONT SUSPENSION FOR FRONT WHEEL DRIVE VEHICLE

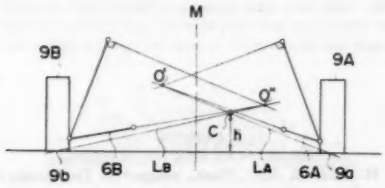
Hitoshi Inoue, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Dec. 29, 1982, Ser. No. 454,157

Claims priority, application Japan, Jan. 7, 1982, 57-1134

Int. Cl.³ B62D *9/00*

U.S. Cl. 280—675 **13 Claims**



1. A front suspension for a front engine front wheel drive type vehicle comprising a pair of lower arms swingably connecting right and left front wheels to a lower part of the body of the vehicle, and a pair of upper support means for resiliently connecting the front wheels to an upper part of the body thereby making the front wheels swingable about respective swing centers in which the engine of the vehicle is laterally mounted and the center of gravity of the vehicle thereof is laterally offset from the central longitudinal axis, wherein the improvement comprises locating the roll center at the intersection of a first line passing through the treading point of one of the front wheels and the swing center thereof and a second line passing through the treading point of the other front wheel and the swing center thereof is offset from the longitudinal axis of the body toward the offset center of gravity.

4,469,351

SEATBELT SYSTEM

Fumio Matsuoka, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 28, 1982, Ser. No. 343,474

Claims priority, application Japan, Feb. 12, 1981, 56-18534[U]; Feb. 12, 1981, 56-18535[U]; Feb. 12, 1981, 56-18536[U]

Int. Cl.³ B60R *21/00*

U.S. Cl. 280—806 **17 Claims**

1. A seatbelt system having a webbing to be fastened about an occupant seated at a seat in an automotive vehicle, comprising:

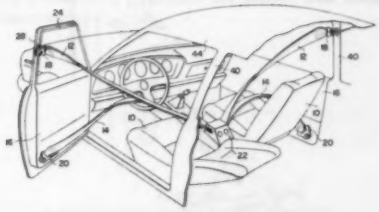
a retractor securing one end of the webbing for winding or unwinding the webbing during normal condition of a vehicle and preventing the webbing from being unwound in the event of an emergency situation of the vehicle;

an anchor plate secured to the other end of the webbing;

driving means connected to said anchor plate for moving said anchor plate so that, when the occupant is seated at the seat for driving the vehicle, the webbing is fastened about the occupant seated at the seat and, when the occupant leaves the vehicle, the webbing is released from the occupant;

emergency tensioning means for pulling said anchor plate in the event of an emergency situation of the vehicle in such a direction that the webbing is fastened more tightly about the occupant seated at the seat, said emergency tensioning means for engagement with said anchor plate only when the webbing is fastened about the occupant seated at the seat,

said emergency tensioning means further comprising: a cylinder firmly secured into the inner surface of the vehicle body, a piston slidably inserted into said cylinder, and connecting means for connecting said piston to said anchor plate only when the webbing is fastened about the occupant seated at the seat;



said connecting means further comprising: a sliding member slidably inserted into said cylinder at an end opposite the end which is the open end of said hollow member faces, and an engaging member firmly secured to said sliding member for engagement with said anchor plate, said engaging member further comprising a wire having a loop portion for engagement with said anchor plate, and, a stopper extending through said piston and having opposite ends, one end thereof being firmly secured to said sliding member, and the other end thereof radially extending, not passing through said piston, in the direction toward the former end, and said latter end being deformable by a tension of the webbing beyond a predetermined value;

exploding means for exploding in the event of an emergency situation of the vehicle to push said piston in such a direction that said connecting means pulls said anchor plate so that the webbing can be refastened more tightly about the occupant seated at the seat; and

ignition means for igniting said exploding means in the event of an emergency of the vehicle.

4,469,352

MOTOR VEHICLE WITH A VERTICALLY ADJUSTABLE SAFETY BELT GUIDE FITTING

Paul Körner; Heinz Rest, both of Cologne, and Ralf Giese, Mechernich, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 13, 1982, Ser. No. 377,881

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120182

Int. Cl.³ B60R *21/10;* **A62B** *35/02*

U.S. Cl. 280—808 **2 Claims**

1. In a system for mounting a safety belt in a motor vehicle having a body including a B-pillar portion and having a vertically adjustable safety belt guide fitting formed as a hollow component and carried with the B-pillar, the guide fitting having a toothed portion extending through the length of the

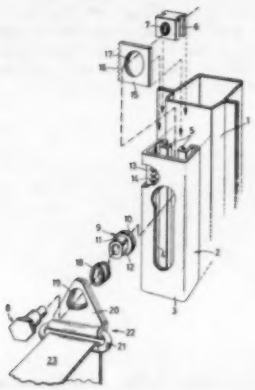
desired range of adjustment of the guide fitting, and having an engagement slide including teeth engageable with the teeth of the toothed portion at different vertical positions an improved guide fitting characterized in that

A. the hollow component is formed as a sheet metal part of approximately C-shaped cross-section having inwardly extending guide legs formed with its side positions;

B. a toothed strip is fixed to the base portion of the hollow component having its toothed surface extending in a direction normal to the guide legs;

C. an H-shaped sliding piece is guidingly received on the guide legs within the hollow component and includes means for receiving a fastening bolt;

D. an eccentric bushing is pivotably mounted about the fastening bolt, the eccentric bushing including a shank



having flatted portions formed thereon and an eccentrically positioned disc;

E. an engagement member is provided which includes a circular aperture for receiving the bushing disc and is located in the plane of the teeth of the toothed strip and includes corresponding teeth engageable with the teeth of the toothed strip in direct response to rotation of the bushing disc within the circular aperture;

F. a sleeve member is formed to receive the bushing shank portion; and

G. a sheet metal part carrying a guide shackle of the safety belt including means defining a sector-shaped aperture therethrough for receiving the sleeve whereby limited rotation of the eccentric bushing to move the engagement member teeth into and out of engagement with the teeth of the toothed strip is permitted.

4,469,353

FORGERY-DETERRENT DOCUMENT LAMINATION

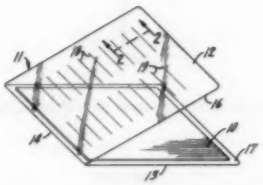
Mushtaq Anarwala, Chicago, Ill., assignor to Sealtran Corporation, Chicago, Ill.

Filed Apr. 12, 1982, Ser. No. 367,258

Int. Cl.[3] **G09F** *3/00*; **B32B** *7/04, 3/00, 33/00*

U.S. Cl. 283—74 **14 Claims**

1. A forgery-deterrent protective lamination for an identification card or other document comprising a transparent film of tough, abrasion resistant polyester resin having one surface coated with a layer of adhesive, activatable by heat and pressure to laminate the film to the document, and having a multiplicity of thin, essentially invisible slits extending through the polyester film and the adhesive in a predetermined pattern covering at least a preselected area of the film sufficient to cover a critical portion of the document, the slits remaining essentially invisible when the protective lamination is bonded



to a document under heat and pressure but being revealed upon attempted post-lamination tampering.

4,469,354

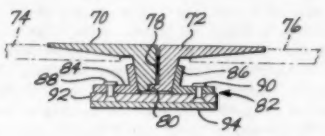
BREAKAWAY DUCT COUPLING

Jack H. Caldwell, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 429,875

Int. Cl.[3] **F16L** *35/00*

U.S. Cl. 285—2 **1 Claim**



1. A breakaway duct coupling comprising:

a pair of flange sections, each flange section adapted to both mate with a duct section and with each other to form a ribbed portion around the circumference of the ducts to be joined;

a plurality of U-channel sections, each section comprising parallel, predeterminedly spaced side sections secured via shearable fasteners to a segment portion, the U-channel sections adapted to fit over said ribbed portion with said side sections bearing against the flange ribbed portion tending to couple the ducts, the U-channel sections being predeterminedly spaced one to the other around said ribbed portion; and

a band adapted to encircle the U-channel sections and bear against said segment portions thereby securing the coupling;

the shearable fasteners being designed such that upon a

predetermined bending load being applied to the duct, the fasteners shear thereby releasing the duct coupling.

4,469,355

Patent Not Issued For This Number

4,469,356

CONNECTING DEVICE AND METHOD

Maurice L. Duret, Aix en Provence, and Yves M. L. Nicolas, Marseilles, both of France, assignors to Societe Nationale Industrielle Aerospatial, France

Continuation of Ser. No. 176,870, Aug. 11, 1980,. This application Aug. 24, 1982, Ser. No. 410,896

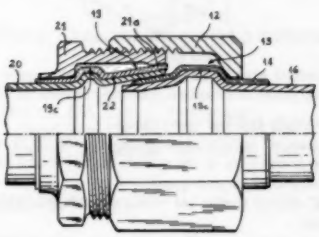
Claims priority, application France, Sep. 3, 1979, 79 22005

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—332 **9 Claims**

1. A process for providing a free end of a deformable rigid pipe with a connecting section having a desired contour adapted to mate with a connecting section of another pipe, said connecting section including an individual unobstructed external outwardly projecting circumferential reinforced bead spaced from the free end of said pipe, said process comprising the steps of:

positioning at said free end a concentric reinforcing sleeve having smooth inner and outer walls made of a material which is mechanically stronger than said pipe, without any connection between said pipe and said sleeve which can inhibit slippage between said sleeve and said pipe, said



sleeve having end edges which are bevelled or rounded facing the surface of said pipe,

and simultaneously radially expanding a section of said end and said sleeve to form said contour and said bead within the overlapping length of said pipe and said sleeve, the outer surfaces of both of said end and said sleeve being correspondingly expanded to the contour of said head.

4,469,357

COMPOSITE COUPLING

Charles L. Martin, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 608,209, Aug. 27, 1975, which is a continuation-in-part of Ser. No. 404,723, Oct. 9, 1973, abandoned, and a continuation-in-part of Ser. No. 404,724, Oct. 9, 1973, abandoned. This application Feb. 6, 1980, Ser. No. 118,867

Claims priority, application Sweden, Apr. 9, 1975, 7504071-7

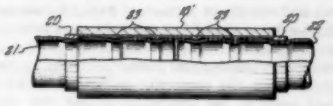
Int. Cl.³ F16L *25/00*

U.S. Cl. 285—381 **24 Claims**

1. A composite coupling for joining cylindrical substrates which comprises:

(a) a tubular heat-recoverable metallic compression sleeve having a generally uniform interior surface; and

(b) a tubular metallic insert formed of a gall-prone metal snugly and concentrically disposed within said sleeve and adapted to contact and form a secure connection between



said cylindrical substrates by being driven inwardly by said sleeve when said sleeve is heated above its transition temperature, the exterior surface of said insert bearing at least one radial tooth, said tooth remaining on the exterior surface of said insert during recovery, and the interior surface of said insert being generally uniform and exhibiting profilometer roughness not greater than about 125 micro-inches.

4,469,358

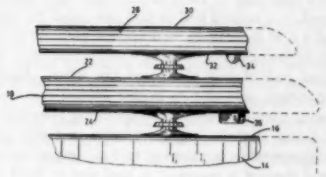
CHILD PROOF SECURITY DEVICE

Phillip G. Abbott, Rockford, Tenn., assignor to Terry E. Henley, Knoxville, Tenn.

Filed Apr. 21, 1982, Ser. No. 370,378

Int. Cl.³ E05C *7/02*

U.S. Cl. 292—288 **1 Claim**



1. A toilet bowl security system including at least a first and further device for preventing small children from independently gaining access to the water and bowl area of a conventional bathroom toilet which has a pivotal seat portion defining an upper surface and a lower surface, said lower surface carrying stop means which rest on the upper rim of the toilet bowl when deployed and a pivotal lid portion which defines an upper surface and a lower surface which carries suitable stop means which rest on the upper surface of the seat portion when the lid is moved to its deployed position for covering the opening in the toilet bowl, each of said devices comprising:

a stem portion defining first and further end portions;

a first suction cup member fabricated from a flexible air impervious material and carried by said first end portion of said stem portion, said first suction cup member defining a rim having a selected cross-sectional area; and

a further suction cup member fabricated from a flexible air impervious material and carried by said further end portion of said stem portion, said further suction cup member having a rim defining a crosssectional area which is less than the cross-sectional area defined by said rim of said first suction cup member, whereby one of said devices is

mounted such that its first suction cup member engages the upper surface of said bowl rim and its further suction cup member engages the lower surface of said seat portion, and the further device is mounted such that its first suction cup member engages the lower surface of said lid and its further suction cup member engages the upper surface of said seat portion thereby said first suction cup members remain secured to the upper rim of said toilet bowl and the lower surface of said lid inasmuch as the adhesive force of said first suction cup members is greater than the adhesive force of said further suction cup members thereby causing said further suction cup members to separate from the respective surface to which they are joined prior to the separation of said first suction cup members from the respective surfaces to which they are joined.

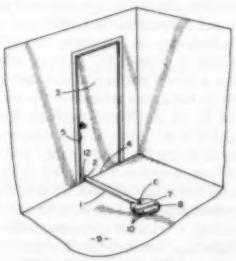
4,469,359

DOOR LOCK ASSEMBLY

Larry Westbrooks, 1022 Lois Pl., Apartment 218, Joliet, Ill. 60435

Filed Dec. 27, 1982, Ser. No. 453,037
Int. Cl.³ E05C *17/54, 17/12*
U.S. Cl. 292—288 **2 Claims**

1. A door lock assembly for locking a door, comprising an elongated bar having a first and a second end, said first end thereof bearing against said door when in the locking position, an anchor plate member, said anchor plate member being secured to the floor of an enclosure at a location spaced apart a pre-selected distance from said door in the direction of opening, including said floor, said pre-selected distance being far enough for said door to clear said anchor plate member when it is opened, said second end of said elongated bar has a cross-section of a first dimension, said anchor plate member including a slot formed therein opening toward said door to receive said second end of said elongated bar when placed in said locking position, said slot including spaced apart side walls being spaced apart a distance corresponding to said first dimension and being slightly larger whereby said side walls bear against corresponding portions of said elongated bar when said second end thereof is received in said slot to hold said elongated bar in the longitudinal in-line position facing said door with the first end of said elongated bar bearing against said door to prevent it from opening when said elongated bar is in



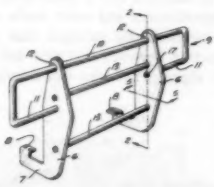
said locking position, wherein said slot includes an end wall spaced apart inwardly of said anchor plate member and from said opening of said slot a pre-selected distance, said end wall extending laterally across said slot between said side walls thereof and providing an abutment surface, said preselected distance of said end wall of said slot from said opening thereof being sufficient for said side walls of said slot bearing against corresponding portions of said elongated bar when in said locking position to hold said elongated bar in said longitudinal in-line position facing said door with the first end of said elongated bar bearing against said door to prevent it from opening.

4,469,360

VEHICLE BULL-BAR

Norman K. Drury, Bankstown, Australia, assignor to Drumac Holding Pty. Limited, New South Wales, Australia

Filed Jan. 11, 1983, Ser. No. 457,210
Claims priority, application Australia, Jan. 21, 1982, PF2379
Int. Cl.³ B60R *19/02*
U.S. Cl. 293—102 **3 Claims**



1. A vehicle bull-bar comprising:
(a) a pair of upright stanchions adapted to be secured by their lower ends to the vehicle structure and having holes formed in their upper ends,
(b) a C-shaped fender bar which extends freely through said holes,
(c) means for removably securing the ends of said C-shaped fender bar to said stanchions intermediately of the ends thereof, and
(d) at least one further fender bar which extends between said stanchions and has its ends removably secured thereto.

4,469,361

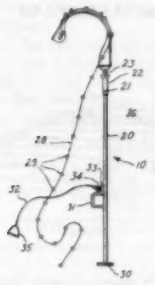
DERRICK SKY HOOK

Hugh W. Pendergraft, P.O. Box 342, Seymour, Mo. 65746

Filed Apr. 21, 1983, Ser. No. 487,109
Int. Cl.³ A47F *13/06*
U.S. Cl. 294—19 R **1 Claim**

1. A derrick sky hook, comprising, in combination, an elongated handle, a swivel at one end of said handle, and a "U"-shaped hook support carried by its one end on said swivel, a

plurality of spaced-apart loops mounted on an outer side of said hook support, a pull back rope inserted through said loops, a plurality of spaced-apart knots along said rope, one end of



said rope being secured to an opposite end of said hook support, said rope extending around said outer side of said hook support, an opposite end of said rope being free for grasping in a person's hand during use, a cross-handle on an opposite end of said handle, and a safety cable tethered by its one end to a longitudinally intermediate portion of said handle.

4,469,362

GRIPPER ARRANGEMENT FOR A HOISTING APPARATUS

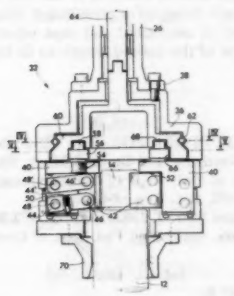
Joachim Schaarschmidt, Stutensee, and Erwin Deibel, Rastatt, both of Fed. Rep. of Germany, assignors to Maag Gear-Wheel & Machine Co. Ltd., Zurich, Switzerland

Filed May 27, 1982, Ser. No. 382,696

Claims priority, application Switzerland, Jun. 12, 1981, 3871/81

Int. Cl.³ B66C *1/42*

U.S. Cl. 294—116 **12 Claims**



1. A gripper arrangement for a hoisting apparatus for transporting workpieces having a substantially plug-like end, comprising:

a housing operatively connected with the hoisting apparatus;

at least two slide members guided to be radially displaceable within said housing and symmetrically with respect to a primary axis;

a respective clamping jaw provided for each slide member;

a control body member cooperating with said slide members;

a drive motor with which there is operatively coupled said control body member;

said control body member being mounted for rotational movement about said primary axis;

control cams provided for said control body member;

said control cams displacing said slide members during rotation of said control body member; and

means for hingedly supporting at least one of the clamping jaws at its related slide member, so that it can move out of the way of the end of the workpiece penetrating between the clamping jaws and then automatically prevents, by exerting a clamping action, sliding out of such workpiece end.

4,469,363

FIREWOOD CARRIER

Alec K. Kalla, Rte. 1, Box 140 B, Conifer, Colo. 80433

Continuation of Ser. No. 224,745, Jan. 13, 1981, abandoned. This application Dec. 4, 1981, Ser. No. 327,484

Int. Cl.³ A45C *71/00*

U.S. Cl. 294—154 **7 Claims**

1. In a sling carrier, an elongated, flexible tendon member doubled upon itself to define opposite sides of substantially equal length extending from a common closed end and terminating in opposite free ends, said opposite sides criss-crossing one another to define intersecting portions at spaced intervals, and securing means for each of said intersecting portions, each securing means operative to secure said intersecting portions together in parallel, contiguous relation to one another so as to define transversely extending spreader members of predetermined width, said free ends of said tendon member looped under and extending beyond said closed end to define a generally loop-shaped carrier for the placement of elongated objects therein.

4,469,364

TOOL BOX FOR COVERED PICKUP TRUCKS

Hassan Rafi-Zadeh, 5301 E. Mockingbird La., Paradise Valley, Ariz. 85253

Filed Sep. 27, 1982, Ser. No. 424,009

Int. Cl.³ B60R *11/06*

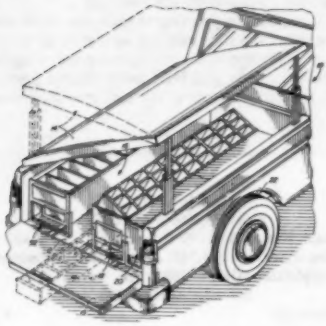
U.S. Cl. 296—37.6 **13 Claims**

1. In combination, a pickup truck having a bed which has a front and a rear and a fore-and-aft extent between the front and rear, a movable cover arranged over the bed, and a set of containers comprising:

(a) first unit means for storing articles and including recess means for receiving a wheel well and having a drawer arranged for reciprocating along the fore-and-aft extent and rearwardly of the associated bed of the truck;

(b) second unit means for storing articles and including a substantially symmetrical frame having a planar bottom and having a drawer arranged for reciprocating along the fore-and-aft extent and rearwardly of the associated bed of the truck; and

(c) wheel well unit means for storing articles and including a frame arranged for wrapping around an associated wheel well projecting into the bed of the truck, said wheel well unit means comprising a pair of similar well portions separated from one another and connected together by a



storage portion including a bottom wall adjustable toward and away from the associated bed of the truck in order to accomodate a specific wheel well while maximizing storage capacity within the storage portion; at least one of said first unit means, said second unit means, and said wheel well unit means being disposed in the bed.

4,469,365

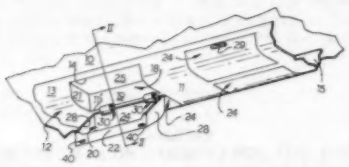
AUTOMOTIVE SUNGLASS STORAGE SYSTEM

Konrad H. Marcus, and Michael J. Cody, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jul. 29, 1982, Ser. No. 403,062

Int. Cl.³ B60R 7/00

U.S. Cl. 296—37.7 **11 Claims**



1. For use in a vehicle such as an automobile, an overhead storage system for relatively small items comprising:

a housing including means for securing said housing to the ceiling of a vehicle, said housing defined by a floor and integral side walls and including at least one aperture formed through one said of side walls to define a first storage recess,

a cover configurated to the shape of said side wall and said aperture therein and integrally including wall means defining a storage receptacle, and

hinge means pivotally coupling an edge of said cover to an edge of said housing adjacent said aperture for permitting said cover to be moved from a closed position in which said cover wall means are positioned within said housing to an open position permitting access to said storage receptacle.

4,469,366

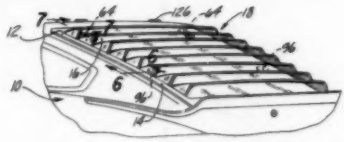
LOUVER CONSTRUCTION

Dann T. Deaver, Harper Woods, Mich., assignor to Ventre Corporation, Mt. Clemens, Mich.

Filed Sep. 16, 1982, Ser. No. 419,083

Int. Cl.³ B60J 3/00

U.S. Cl. 296—97 A **20 Claims**



1. A louvre assembly adapted to be mounted to the rear window assembly of an automotive vehicle, comprising an end cap construction and a plurality of elongated channel members, said end cap construction comprising a plurality of identical right hand end caps and a plurality of similar but reverse formed left hand end caps, each of said end caps being generally L-shaped in cross section and having a downwardly extending leg portion and a laterally extending leg portion, a pair of side rails one associated with said plurality of right hand end caps and the other for said plurality of left hand end caps, each side rail having a channel adapted to receive the downwardly extending leg portions of the associated ones of said right and left hand end caps, a transition portion connecting said downwardly extending leg portion and said laterally extending leg portion to locate said laterally extending leg portion generally horizontally when the louvre assembly is mounted to said rear window assembly, said laterally extending end portion having a reduced section end adapted to be matably received within the end of an associated one of said channel members, detent means located between said end section and the mating end of said channel member, said detent means positively locating said channel member in alignment with the associated one of said end caps and securing said channel member and said end cap together, said channel member being of a preselected length to connect said right hand and left hand end caps in a predetermined spaced relationship whereby the louvre assembly will be of the desired width to fit the rear window assembly, said side rails being of a preselected length to accept a selected number of associated end caps whereby the louvre assembly will be of the desired length to fit the rear window assembly.

4,469,367

SUPPORT FOR SUN VISORS

Otto Kuttler, Wertheim, and Gerhard Mack, Rheinfelden-Adelhausen, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Mar. 7, 1983, Ser. No. 472,961

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1982, 8208831

Int. Cl.³ B60J 3/02

U.S. Cl. 296—97 K **5 Claims**

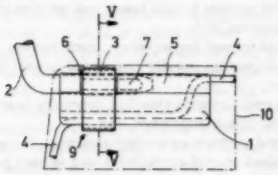
1. A support for the body of a sun visor, comprising a support member connected to the visor body and for joining the visor body to a mounting shaft;

a generally U-shaped clamping spring, including a web portion which wraps around the mounting shaft and passes above the top of the support member and including first and second clamping arms which extend away from the web, down past the opposite sides of the support member;

the first arm of the clamping spring terminating at a hook defined by a first bend in the first arm, which bend defines a first section of the first arm that extends away from the

first arm and toward the second arm, and defined by a second bend at the end of the first section of the first arm for defining a second hook section of the first arm, which second hook section is bent toward the web of the "U" and the support member; the second hook section terminating at a free edge; the hook being beneath the bottom of the support member;

the second arm of the clamping spring having a third bend located beneath the bottom of the support member for defining beyond the third bend a third arm section, which is inclined upward toward the "U" of the spring and toward the support member; the third section terminating



a distance away from the second arm, to which the third section is attached at the first bend, and a distance away from the opposite first arm; approximately at the third bend, the second arm having a hooking edge, behind which the second section of the hook of the first arm is hookable; the hooking edge being located in the plane of the third section; the hooking edge of the second arm being located below the arc of swing of the free edge of the second section of the first hook as the clamping arms of the spring swing toward each other, such that the third section serves as an overridable bevel for the free edge of the second section of the hook to guide the free edge of the second section to the hooking edge of the second arm.

4,469,368

PASSENGER CAR BODY STRUCTURE

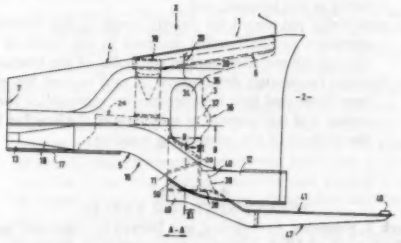
Georg Eger, Pleidelsheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,797

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114379

Int. Cl.³ B62D *21/00*

U.S. Cl. 296—188 **2 Claims**



1. A passenger car body structure comprising upper and lower longitudinal bearers, fenders, each of which being provided with a shock absorber mount and being connected to respective upper and lower longitudinal bearers, a transverse wall forming an end wall of a passenger compartment of the car, the transverse wall extending, at opposite ends thereof, to said fenders, a floor plate being attached directly to the transverse wall and indirectly to a wall of each fender, the transverse wall being provided at its top with a parallel reinforcing element, said parallel reinforcing element interconnecting the transverse wall with the shock absorber mounts of the fender walls and the upper longitudinal bearers, a frame system consisting of hollow members being provided at the bottom of the transverse wall, the hollow members of said frame system being formed by portions of the transverse wall, the floor plate, longitudinally extending floor plate support elements, and reinforcing members, and each reinforcing member being connected to the floor plate and a respective one of the lower longitudinal bearers and further comprising the shock absorber mounts being provided with a vertical extension having a reinforcement which extends vertically within the lower longitudinal bearers.

4,469,369

MODULE ELEMENT OF CITY BUS OR LIKE VEHICLE AND BUS ASSEMBLED ON THE BASIS OF SUCH MODULE ELEMENTS

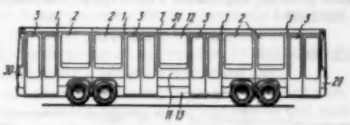
Vladimir K. Belik; Bogdan V. Kurach, and Yaroslav S. Trach, all of Lvov, U.S.S.R., assignors to Vsesojuzny Konstruktorsko-Experimentalny Institut Avtobusostroenya, Lvov, U.S.S.R.

PCT No. PCT/SU80/00043, § 371 Date Nov. 4, 1981, § 102(e) Date Nov. 4, 1981, PCT Pub. No. WO81/02555, PCT Pub. Date Sep. 17, 1981

Continuation of Ser. No. 320,965, Nov. 4, 1981, abandoned. This PCT application Mar. 7, 1980, Ser. No. 572,954

Int. Cl.³ B62D *23/00, 31/02, 47/02*

U.S. Cl. 296—197 **5 Claims**



1. A module element of a city bus or like vehicle, comprising: a tubular body section open at the ends and including opposed side walls, a roof, and a floor structure, each of the side walls of said section being provided with a window, a door provided in one of said side walls and adjacent to a window, suspension means carried by said body section and including a pair of spaced, coaxial wheels disposed under the windows in said side walls, said wheels being rotatable about an axis off-set from the centerline of said windows, and longitudinal and transverse bulkhead structures so that said module element is sufficiently rigid to form a vehicle when interconnected with another module element.

4,469,370

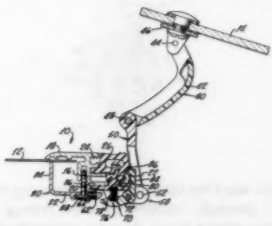
SUNROOF WITH DETACHABLE CONNECTOR

Robert J. Petersen, 4432 Pinyon Tree La., Irvine, Calif. 92715

Filed Dec. 21, 1981, Ser. No. 332,721

Int. Cl.³ B60J *7/18*

U.S. Cl. 296—218 **10 Claims**



1. A closure for a wall opening comprising

a perimetrical frame adapted to be fixed to the perimeter of said opening, said frame having a frame recess,

a closure panel having one side hinged to said frame, and

a fastening device connected to said panel and detachably connected to said frame for detachably connecting the other side of said closure panel to said frame, said fastening device comprising,

a latch connector body connected to said closure panel,

connecting means including a projection on said connector body in releasable engagement with said frame recess, and

releasable locking means pivotally mounted on said connector body and releasably engaged with a portion of said frame displaced from said recess for restraining release of said projection from said frame recess,

said connecting means including means for restraining all motion of said connector body relative to said frame except a relative pivotal motion, said locking means including means for restraining said relative pivotal motion.

4,469,371

BEARING DEVICE FOR A LENGTHWISE-DISPLACEABLE AND PIVOTABLE TELESCOPING TUBE

Hans Jardin, Inning, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Gauting, Fed. Rep. of Germany

Filed Dec. 22, 1982, Ser. No. 452,291

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202507

Int. Cl.³ B60J *7/00*

U.S. Cl. 296—223 **20 Claims**

1. Bearing device for connecting a telescoping tube of a sliding roof for vehicles to the sliding roof, which is displaceable lengthwise and pivotable about a pivot axis running transversely to its lengthwise axis, comprising a guide traversed by a telescoping tube, said guide being fastened to a bearing member having a resilient support for producing a spring action which permits pivoting of the guide relative to the sliding roof.

4,469,372

ROLLABLE STOOL

Daniel C. Long, 14314 Hamilton, Riverview, Mich. 48192

Filed Jul. 27, 1981, Ser. No. 287,034

Int. Cl.³ A61H *3/04*; A47C *9/00*

U.S. Cl. 297—5 **1 Claim**

1. A rollable stool for substantially supporting the weight of a person in a generally standing position resting thereon and self-propelledly rolling about thereon, comprising:

seat means for substantially supporting the weight a person in a generally standing position, said seat means situated above the rest of the stool;

seat support means for supporting said seat means from below, having and arranged along a substantially vertical axis;

a trio of leg members, each having a lower end portion, said lower end portions generally circumferentially and generally equiangularly disposed about said axis to provide stability for the stool in all horizontal directions, comprising

a first leg member having

a generally vertically arranged first portion defining an upper end portion of said first leg member attached to and supporting said seat support means,

a second portion extending generally vertically downwardly at a predetermined first angle from said second portion to said lower end portion of said first leg member, and

a pair of second leg members, each having

a first portion regidly connected to said first leg member,

a second portion extending generally horizontally from said first leg member, and

a third portion extending downwardly at a predetermined second angle from said second portion to said lower end portion of said second leg member; and

a trio of rolling means associated with and connected to said lower end portions of said leg members and supporting the same for rolling movement upon a generally horizontal support surface,

said rolling means, leg members and seat support means coacting to form a stable rollable base for said seat means,

said leg members and seat support means being sized and spaced to render the stool adapted for substantially supporting a generally standing person resting on said seat means, and adapted for providing generous clearance for the legs of a generally standing person self-propelledly rolling about upon a generally horizontal support surface while resting on and substantially support by said seat means,

means for rigidly and detachable connecting the second leg members to the first leg member to permit disassembly of the stool and to facilitate shipping the stool in compact form,

said last mentioned means comprising,

a furcated bracket transversely and rigidly attached to the second portion of the first leg member having a hole near each end of the bracket:

second leg members having first portions provided with sockets adapted for receiving the ends of the bracket disposed therein, and

transverse holes adjacent to the sockets, aligned with the holes in the bracket; and

removable pin means for fixedly coupling the second leg members to the bracket inserted in the holes in said second leg members and in the holes of the bracket,

thereby facilitating detachment of said second leg members from said first leg member by removal of the pin means and withdrawal of said ends of the bracket from the sockets of the second leg members.

4,469,373

INFANT SEAT FOR TABLES

Mark T. Simmons, Providence, and Darrell G. Simmons, Smithfield, both of Utah, assignors to Simmons & Simmons, Inc., Logan, Utah

Continuation of Ser. No. 134,964, Mar. 28, 1980,. This application Feb. 24, 1982, Ser. No. 352,043

The portion of the term of this patent subsequent to Mar. 10, 1999, has been disclaimed.

Int. Cl.³ A47B *83/02*

U.S. Cl. 297—174 **11 Claims**

1. A portable folding baby seat for cantilevered mounting on the edge of and above the plane of a table when in a position of use and for folding into a single plane when in a position of storage, said portable folding baby seat comprising:

a flexible seat portion hung from a frame, said flexible seat portion having a generally horizontal bottom and a generally vertical back and sides when said baby seat is in said position of use, and said flexible seat portion being collapsible into a single plane when said baby seat is in said position of storage:

said frame comprising:

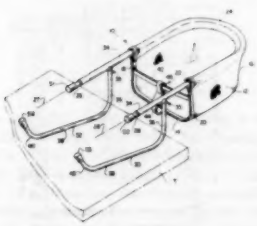
a generally U-shaped member from which said flexible seat portion hangs, said U-shaped member lying in a first plane adapted for positioning above the plane of the table, said U-shaped member including end portions extending forwardly from the top of each side of said flexible seat portion for engagement with the top of said table, and

a pair of lower support arms for engagement with the underside of said table at points that are forward from the most forward points at which said end portions of the U-shaped member engage with the top of said table, each of said lower support arms including:

an upper sleeve telescopingly and slideably mounted on a respective end portion of said U-shaped member for slideable positioning and rotation along the axis of said member, said sleeve having two open ends and an intermediate, cylindrically shaped tubular section with a uniform inner diameter sufficiently large to permit the sleeve to rotate about and slide along the axis of the U-shaped member, and

a curved member having:

a downwardly extending arm portion having one end connected to the intermediate portion of said



sleeve and having a length less than one-half of the distance between said sleeves, said downwardly extending arm portion extending in a direction away from said axis of rotation of said sleeve,

a forwardly extending arm portion connected to said downwardly extending arm portion, and

an upwardly extending end portion connected to said forwardly extending arm portion, said upwardly extending arm portion extending in a direction towards said axis of rotation of said sleeve;

whereby said downwardly and forwardly extending arm portions and said upwardly extending end portion of each lower support arm lie in a second plane that is rotated so as to be generally perpendicular to the plane of said U-shaped member when said baby seat is in its position of use, and further whereby said second plane is rotated so as to lie in said first plane when said baby seat is in its position of storage;

said frame further comprising stops made from a resilient material, such as rubber, secured around the periphery of the U-shaped or sleeve members of the frame and a point forward of the point of connection of the downwardly extending arm portion and the sleeve near the end portions of said U-shaped member and said frame further including means coupled to the U-shaped member for preventing the sleeves which are telescopingly mounted for rotation from being inadvertently removed therefrom while allowing disassembly of the lower support arms from the U-shaped member, as well as removal of the flexible seat portion when detached.

4,469,374

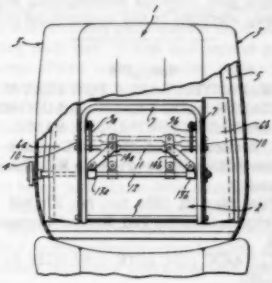
AUTOMOTIVE SEAT

Jo, Kashihara, Nakaune Okayama, and Etsusuke Oda, Futago Kurashiki, both of Japan, assignors to Namba Press Works Co., Ltd., Okayamaken, Japan

Filed Nov. 20, 1981, Ser. No. 323,662

Int. Cl.³ A47C 7/46, 3/00

U.S. Cl. 297—284 **6 Claims**



1. In a vehicle seat of the type having a seat portion, a seat back portion including a bolster frame, and a moveable lumbar support pad in the seat back portion, an improved lumbar support assembly comprising:

a support frame pivotable about a generally horizontal axis about the lower portion of said support frame,

a threaded axle mounted for rotation to the bolster frame extending along a generally horizontal axis,

at least one thread holder engaging said threaded axle,

at least one joint rod having a first and second end, said first end pivotably fixed to said thread holder,

a second axle pivotably attached to said joint rod second end, said second axle engaging at least one elongated slot formed by the bolster frame,

at least one joint lever having a first and second end, said first end pivotably attached to said second axle, said second end pivotably attached to said support frame whereby rotation of said threaded axle causes said thread holder to move along said threaded axle thus causing

the position of said second axle within said slot to change thereby causing said joint levers to effect changes in the position of said support frame.

4,469,375

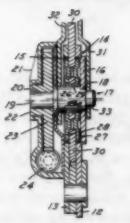
TAUMEL HINGE RECLINER

Daniel R. Boyer, Gainesville, Fla., assignor to Keiper U.S.A., Inc., Battle Creek, Mich.

Filed Nov. 25, 1981, Ser. No. 324,765

Int. Cl.³ A47C 1/25

U.S. Cl. 297—362 **16 Claims**



1. Adjustable seat back hinge comprising seat and seat back bracket means, eccentric pin means pivotally connecting in eccentric relation said respective bracket means, sandwich

taumel spur and ring gear means pivotally connected in eccentric relation and actuated to provide taumel relative progression of said spur and ring gear means by rotation of said eccentric pin means, and means including spur and ring gear elements of said gear means to adjust relative operative positioning of said seat and seat back bracket means, said spur gear means having positioning connection to said seat back bracket means, said connection including an intermediate plate and releasable latch means, said spur gear means comprising a pair of identical spur gear elements interengaging single relative position locating apertures in said intermediate plate.

4,469,376

HINGE, PARTICULARLY FOR SEAT WITH ADJUSTABLE BACK REST AND METHOD OF MANUFACTURING THE SAME

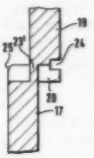
Herbert Peiz, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co KG, Remscheid, Fed. Rep. of Germany

Filed May 10, 1982, Ser. No. 376,846

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118896

Int. Cl.³ A47C *1/24*; B21K *1/30*; B23P *15/14*

U.S. Cl. 297—362 **7 Claims**



1. A hinge, particularly for a seat unit having a seat and an adjustable back rest, comprising two hinge parts pivotable relative to one another and each connectable with a respective one of the seat and the back rest; an axle pivotally connecting said hinge parts with one another and defining a pivot axis; and means for adjusting and fixing said hinge parts relative to one another so as to provide for a desired relative position of the latter, said means being formed as a transmission for interengaging at least one internal gear and at least one external gear formed on said hinge parts respectively, and including a rotatable eccentric arranged on said axle, said internal gear and said external gear each being deformed in the region of its teeth root circle so as to form in said region an annular groove displacing the material of a respective one of said gears toward its teeth tips.

4,469,377

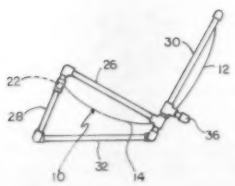
PATIENT-RESTRAINING STRAPLESS SEAT

Mary M. O'Rourke, 7949 Lowry Ter., La Jolla, Calif. 92037

Filed Dec. 28, 1981, Ser. No. 335,069

Int. Cl.³ A47C *31/00*

U.S. Cl. 297—464 **2 Claims**



1. A patient-restraining strapless seat, comprising: a frame adapted to rest on a floor, said frame having upwardly rearwardly inclined front legs structure, and rear legs and back structure; an elongated hammock-like flexible element slung within said frame and having a knees-supporting portion supported at knee height by said front legs structure, a patient's back-supporting portion secured to an upper part of said rear legs and back structure, and a buttocks-supporting portion (14) intermediate the other said portions at a level much below the level of the knees-supporting portion and close to the floor so that a patient may be seated thereon with the buttocks very close to the floor and the knees at knee height and be restrained from escaping unassisted from the seat; said rear legs and back structure being upwardly rearwardly sharply inclined to dispose said patient's back- supporting portion of the hammock-like element well to the rear of said buttocks-supporting portion, and said frame having members disposed bilaterally of a least said buttocks-supporting portion for the patient's comfort and for further insuring restraint from escape.

4,469,378

LOAD-RESPONSIVE BRAKING PRESSURE CONTROL DEVICE ESPECIALLY FOR VEHICLE BRAKE SYSTEMS

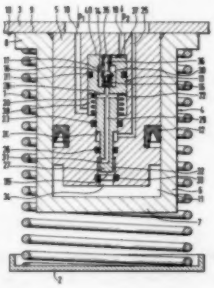
Alfred Birkenbach, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,865

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120432

Int. Cl.³ B60T *8/22*

U.S. Cl. 303—22 R **12 Claims**



1. A load-responsive pressure control device, especially for use in a vehicle braking system between an upstream and a downstream section of a conduit for controlling the pressure in the downstream section in dependence on the vehicle load, comprising

a support having a stop surface;

a control valve interposed between the upstream and downstream sections and displaceable between its open and closed positions;

means for actuating said control valve, including

means for defining an enclosed space having an axis, a stepped piston sealingly accommodated in said space for axial movement and having oppositely facing first and second surfaces respectively having a larger and a smaller axially effective area,

means for subjecting said first and second surfaces to the pressures prevailing respectively in the downstream and upstream sections, and means for displacing said control valve between its open and closed positions in dependence on the movement of said stepped piston; and

means for applying a load-dependent force to said actuating means, including

a cylinder-and-piston unit including a cylinder component and a piston component together bounding a

chamber, one of said components being stationary and the other movable relative to said support,

resilient load-responsive means for urging said movable component into abutment with said stop surface,

means for bounding a flow path into said chamber, including at least a path portion stationary relative to said support,

means for forming a passage of a restricted cross-sectional area in said path position, and

a plunger extending into said path position and connected to said stepped piston for joint movement therewith from a position in which it permits to a position in which it interrupts flow through said passage, so that further movement of said plunger beyond the latter position taken place against the opposition of said urging means as reflected in the pressure prevailing in said chamber.

4,469,379

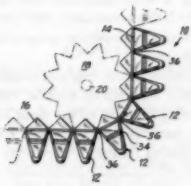
FLEXIBLE BELT WITH TREAD TO AID TURNING

Bernard Kotyuk, Jr., 265 E. 66th St., New York, N.Y. 10021

Filed Feb. 8, 1983, Ser. No. 464,847

Int. Cl.³ B62D *55/24, 55/26*

U.S. Cl. 305—35 EB **7 Claims**



1. A tread for a tracked vehicle, comprising a continuous, flexible base member formed into a track loop having inside an outside surfaces; a plurality of tread elements projecting outwardly from said base member, each of said tread elements having the form of a truncated rectangular pyramid, each of said elements including means for improving the lateral flexibility thereof in the form of a pair of opposed lateral grooves on said tread elements; and a plurality of triangular gear teeth mounted upon the inside surface of said base member in registry with said tread elements.

4,469,380

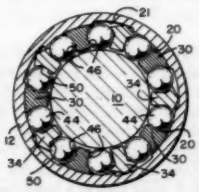
LINEAR MOVEMENT ANTI-FRICTION BEARING

John H. Cowles, Sr., Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 379,622, May 19, 1982, abandoned. This application Nov. 21, 1983, Ser. No. 553,869

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **1 Claim**



1. In a linear movement bearing: an inner race; an outer race having a plurality of radially, inwardly-extending, circumferentially-separated lands on its inside periphery the axial ends of each of the lands being axially spaced inwardly from the ends of the outer race to provide axially extending portions of the outer race of larger inside diameter than the inside diameter of the lands; an annular resilient retainer in the space between the inner race and the outer race, said retainer having axially-spaced apart annular end rings interconnected by circumferentially spaced apart interconnecting bars to provide a plurality of circumferentially-separated pockets; a separate, disconnected resilient separator centrally located within each of the pockets, the pockets and the separators being shaped to form axially-extending pairs of first and second guideways for rolling members, and reversing guideways at the axial ends of and interconnecting each pair of first and second guideways to form continuous closed rolling member paths, the interconnecting bars having curved surfaces and the separators having tapered shoulders, said curved surfaces and tapered shoulders being constructed to keep the rolling members radially in place, the resilience of the retainer and the reslience of the separator and the structure of the retainer and the structure of the separators being such that rolling members may be easily placed in the retainer and the rolling members, separators, and retainer held together as a unit assembly; a plurality of rolling members filling each continuous closed rolling member path, all of the rolling members contacting the inner race, the lengths of said outer race lands and the circumferential separation of the lands being such that the rolling members in said first guideways contact the lands, while the rolling members in said second guideways and reversing guideways are radially-spaced from the outer race.

4,469,381

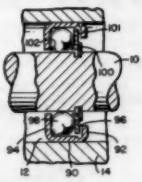
THRUST AND RADIAL BALL BEARING

Michael J. McGuffie, Harwinton, Conn., assignor to The Torrington Company, Torrington, Conn.

Continuation-in-part of Ser. No. 248,698, Mar. 30, 1981, Pat. No. 4,382,639. This application Jul. 6, 1982, Ser. No. 395,684 The portion of the term of this patent subsequent to May 10, 2000, has been disclaimed.

Int. Cl.³ F16C *19/14*

U.S. Cl. 308—174 **2 Claims**



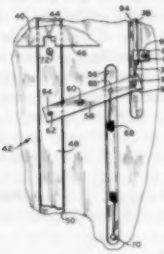
1. A thrust and radial ball bearing for use with rotatable shaft comprising: a pressed metal cup having end flanges; a single loosely-mounted annular thrust washer retained in the metal cup by one of said end flanges and adapted to fit loosely about the rotatable shaft so as to be axially movable with respect to the pressed metal cup; and a plurality of balls adapted to be contacted by the annular thrust washer, the diameter of each ball and the thickness of the thrust washer being such that an axial clearance exists between said one end flange and the thrust washer when a force exerted by the rotatable shaft in the proper axial direction is transmitted to the thrust washer to cause said thrust washer to engage the balls, and the balls to engage the other end flange of the cup.

4,469,382

DESK LOCKING MECHANISM

Mathew A. Sloats; Jay M. Henriott; Paul R. Hedinger, all of Jasper, and Steven F. Trinkel, Rockport, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Nov. 15, 1982, Ser. No. 441,548
Int. Cl.³ E05P *65/44*
U.S. Cl. 312—219 **23 Claims**



1. A remote control locking mechanism for desks, pedestals, cabinets and like assemblies, comprising:

a work station including a plurality of storage compartments, each said storage compartment having closure means for the opening and closing thereof,

a plurality of lock means at respective ones of said storage compartments for locking respective said closure means, each said lock means having operably connected thereto and extending therefrom a cable slidably encased in a sheath member, each said sheath member having its end portions anchored in place and encasing a substantial length of its respective said cable, and

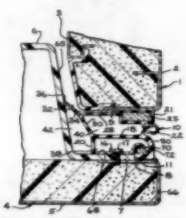
a single remote actuator having said cables connected thereto, said remote actuator including means for simultaneously moving each said cable relative to its respective said sheath member to actuate said lock means for locking and unlocking said closure means.

4,469,383

REFRIGERATOR CABINET AND METHOD OF CONSTRUCTION

Gerhard K. Losert, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 20, 1982, Ser. No. 380,190
Int. Cl.³ A47B *81/00*; E06B *7/16*
U.S. Cl. 312—296 **8 Claims**



1. A refrigerator cabinet comprising:

a storage compartment having an access opening surrounded by a face portion comprising an area composed of magnetic material;

a door hingedly mounted on said cabinet along one edge thereof for closing said access opening, said door comprising an outer metal panel having an inwardly turned flange extending about the periphery thereof and a plastic inner panel having a flange with a peripheral edge portion and terminal end overlying and joined to said flange, said panels having thermal insulation therebetween;

a sealing gasket of resilient material mounted on said door adjacent the peripheral edges thereof and including a base portion overlying said peripheral edge of said inner panel and a cabinet engaging portion integrally joined to said base portion and including a magnetic means attracted to said area of magnetic material and providing the sole means for holding the door in a closed position, said base portion having;

a first section utilized for sealing engagement and securement to the door comprising, as viewed in lateral cross section, a downwardly projecting front seal and a downwardly projecting rear seal spaced from the front seal and an upwardly curved surface joining the rear seal and the front seal, an upwardly depending hollow member the center of which is in vertical alignment and above the rear seal and having a rear vertical surface spaced from the center, and a curved surface between the rear seal and the rear vertical surface of the hollow member with a portion of each said surface being adjacent the terminal end of the plastic inner panel and the rear seal is spaced remote from the terminal end,

a second section spaced from and joined to the first section comprising a web member that is spaced from and overlies the hollow member, said second section having a downwardly extending projection contacting the inner panel, and

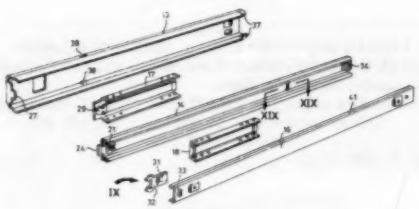
a retainer member overlying and shaped to accommodate the upwardly depending hollow member, said retainer member being secured to the door by fasteners through the plastic inner panel peripheral edge portion and the inwardly turned flange of the outer door panel.

4,469,384

THREE PART SLIDE

Jack P. Fler, Kitchener, and Alan R. Baxter, Hamilton, both of Canada, assignors to Jacmorr Manufacturing Limited, Kitchener, Canada

Continuation of Ser. No. 229,980, Jan. 30, 1981,. This application May 16, 1983, Ser. No. 494,621
Claims priority, application Canada, Nov. 7, 1979, 339355
Int. Cl.³ A47B *88/04*; F16C *21/00*
U.S. Cl. 312—333 **3 Claims**



1. A three-part drawer slide comprising outer, intermediate, and inner rails, bearings between the rails for reduced friction sliding movement of the outer rail relative to the intermediate rail and of the intermediate rail relative to the inner rail, stop means defining a retracted condition of said rails relative to one another and an extended position of said rails relative to one another, first latching means for releasably latching together the intermediate and inner rails in a retracted condition of the latter relative to the former, and second latching means for releasably latching the intermediate and outer rails together in relatively extended position of the intermediate rail relative to the outer rail, and release means responsive to movement of the intermediate rail relative to the outer rail and operative to release the first latching means when the intermediate rail

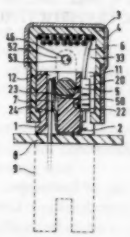
reaches its extended position relative to the outer rail; the first latching means comprising a resilient member on one of the intermediate rails and the inner rail and a first engagement member on the other of said rails, said resilient member and said engagement member being positioned to cooperate and latch together when the inner rail is in the retracted condition relative to the intermediate rail; the second latching means comprising a cam surface formed on a bearing cage interposed between the intermediate and outer rails and positioned to engage latchingly with the resilient member in the extended position of the intermediate rail relative to the outer rail; said cam surface constituting said release means, and deflecting the resilient member in the extended position of the intermediate rail and allowing disengagement of the first engagement member therefrom, whereby the inner rail is freed to move relative to the intermediate rail; and including a first pair of stop members on the intermediate rail and on the outer rail, respectively, said stop members engaging said bearing cage between them in the extended position of the intermediate rail relative to the outer rail, a further stop member on the outer rail that engages the intermediate rail in its retracted condition, the bearing cage normally occupying a position equidistant between the first pair of stop members, and including an abutment member on the outer rail that abuts the bearing cage in the retracted condition of the intermediate rail and serves to shift the bearing cage to its normal equidistant position on closing movement of the suspension.

4,469,385

MODULAR ELECTRICAL CONNECTION TERMINAL

André Petit, Longpont sur orge, and Daniel Jamet, Nozay, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 31, 1982, Ser. No. 413,320
Claims priority, application France, Sep. 4, 1981, 81 16840
Int. Cl.³ H01R *13/631*
U.S. Cl. 339—14 R **8 Claims**



1. A modular terminal for electrically connecting electrical conductors of a cable to rigid electrical terminal pins, comprising:

a plurality of generally U-shaped individual contacts each having one arm adapted to make contact via self-stripping edges with one electrical conductor and another flat arm adapted to press on and make contact with one of said pins;

at least one substantially parallelepipiedal contact support having a top surface and opposed lateral surfaces and further comprising a longitudinal internal groove having longitudinal walls which opens onto said top surface and having a rounded bottom surface, a series of external compartments along each of said lateral surfaces parallel to said internal groove and a series of internal compartments along each of the longitudinal walls of said groove which open onto said bottom surface, each of said external compartments on one side of said groove receiving the arm of one of said contacts adapted to make contact with the electrical conductor and being aligned with one of said internal compartments on the other side of said groove accommodating said flat contact arm extending along the top of said internal compartment and the corresponding pin extending along the bottom of said internal compartment;

an insulating member fixed to each contact support and formed with an internal space at the top adapted to house electrical conductors of a cable; and

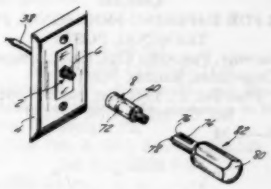
a generally cylindrical rotary cam formed with two diametrically opposed flats separated by part-cylindrical portions, mounted in the groove in each contact support in contact with said flat contact arms and bearing on said rounded bottom surface of said groove, whereby said contacts are pressed simultaneously into contact with respective pins when the part-cylindrical portions of said cam are brought into contact with said flat contact arms.

4,469,386

TAMPER-RESISTANT TERMINATOR FOR A FEMALE COAXIAL PLUG

Abram Ackerman, New Hyde Park, N.Y., assignor to Viewsonics, Inc., Syosset, N.Y.

Filed Sep. 23, 1981, Ser. No. 304,847
Int. Cl.³ H01R *13/44*
U.S. Cl. 339—37 **7 Claims**



1. A coupling device for selectively preventing and enabling access to a coaxial plug comprising:

a housing,

a coupling cap within said housing,

means for retaining said cap within said housing, said cap and housing being rotatable with respect to each other about a common axis when said cap is so retained within said housing,

means for engaging said cap with said plug, said cap being formed with spaced-apart tool-engagement means, and

said housing being formed with spaced-apart slot means that can be aligned with said tool-engagement means in such a manner that spaced-apart fingers which are formed on a rigid tool and respectively capable of passing through said slot means are respectively engageable with said tool-engagement means for selectively engaging said cap with and disengaging said cap from said plug, and further comprising

a deformable baffle between said slot means and said tool-engagement means.

4,469,387

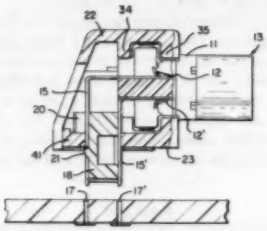
PRINTED CIRCUIT BOARD CONNECTOR

Robert G. McHugh, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 23, 1982, Ser. No. 410,198
Int. Cl.³ H01R *13/44*
U.S. Cl. 339—42 **11 Claims**

6. A printed circuit board connector comprising a body of insulating material from which project rearwardly a series of flexible posts having transversely bent rear portions with free ends protruding beyond an envelope defined by the transverse cross-sectional profile of the connector body characterized by a rigid post locating member receiving the rear portions in sliding engagement and retractable along the rear portions from a location adjacent their free ends to a location substan-

tially within the envelope by application of the connector to a printed circuit board to provide guided entry of the free ends of the rear portions into respective sockets of the printed circuit board without an increase in connector height, the posts



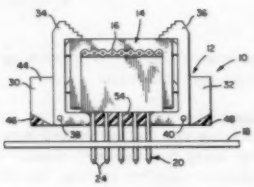
being arranged in two parallel rows, the post locating member being located between the rows and being formed with channels on opposite sidewalls which receive respective posts in a sliding fit.

4,469,388

HEADER FOR IMPOSING FRICTIONAL FORCE ON TERMINAL POSTS

Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Jul. 27, 1981, Ser. No. 287,301
Int. Cl.³ H01R *9/09, 13/629*
U.S. Cl. 339—45 M **9 Claims**



1. A header for receiving an array of terminal posts and effecting self-securement thereto comprising:

an insulative housing comprising:

a body portion including thereon a plurality of post receiving channels being configured to removably receive said posts, said body portion adapted for receipt of an electrical connector; and

a movable housing member secured to said body portion for providing retentive engagement of said electrical connector and for selective movement into direct frictional engagement with at least one of the posts received by said header whereby said header exhibits a withdrawal force from such self-securement to said posts in excess of force required for insertion of said posts therein.

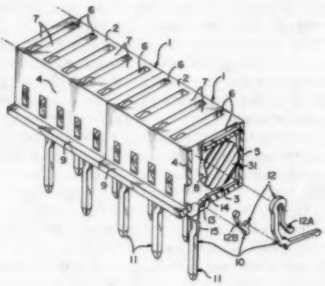
4,469,389

ROTATABLE CAM ACTUATED CONNECTOR FOR CIRCUIT BOARD EDGE

Dimitry Grabbe, Lisbon Falls, Me.; Johannes C. W. Bakermans, Harrisburg, Pa.; Nicola Cosmo, Harrisburg, Pa., and Iosif Korsansky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 6, 1982, Ser. No. 395,563
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—75 MP **10 Claims**

1. A miniature circuit board edge connector assembly comprises an insulative housing, conductive posts projecting from the housing, spring contacts received by the housing and connected with the posts and adapted for resilient flexure toward corresponding circuit conductors on a circuit board that is received by the housing, and a moveable cam received by the housing and adapted for flexing resiliently the spring contacts, characterized in that; the spring contacts include conductor portions, pivot connections between the conductor portions



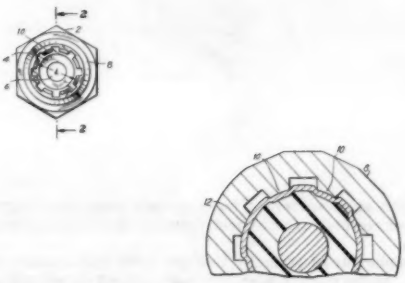
and corresponding posts and the conductor portions being pivotal about the pivot connections toward and into engagement with corresponding circuit conductors, the cam is cylindrical with recesses impinged by the spring contacts and circuit paths are established along the conductor portions from the circuit conductors to corresponding posts, the circuit paths being shorter than the lengths of the spring contacts.

4,469,390

CRIMPED CONNECTOR

Donald J. LeVine, Tarrytown, and Victor L. Salvador, Mamaroneck, both of N.Y., assignors to Kings Electronics Co., Inc., New York, N.Y.

Filed Jun. 9, 1982, Ser. No. 386,633
Int. Cl.³ H01R *11/08*
U.S. Cl. 339—95 R **3 Claims**

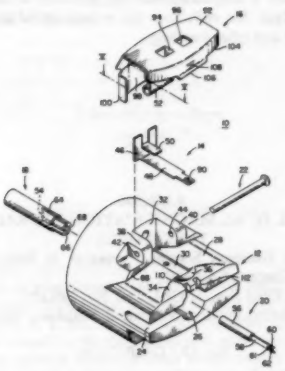


1. In an electrical connector of the type adapted to receive a coaxial cable having an inner conductor surrounded by a dielectric and in turn by a semirigid outer conductor, wherein center connecting means are mechanically and electrically attached to the inner conductor and coupling means are electrically and mechanically attached to the outer conductor, the improvement comprising a radially deformable sleeve forming part of said coupling means and surrounding the semirigid outer conductor of the cable to be attached, and means forming projections within said sleeve whose inner ends are threaded and which extend radially inwardly to immediately surround the semirigid outer conductor, whereby upon crimping of said deformable sleeve said projections bite into the outer surface of said semirigid outer conductor and attach the same to the coupling means of said connector against rotational or longitudinal movement.

4,469,391
COAXIAL CABLE CONNECTOR

Donald S. Rich, Long Valley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Oct. 13, 1981, Ser. No. 310,827
Int. Cl.³ H01R 4/02
U.S. Cl. 339—97 R 22 Claims



1. An electrical connector for effecting connection to a cable having an electrically insulated conductor and a circumscribing shield, said connector comprising:

(a) a housing of electrically conductive material defining first and second channels accessible exteriorly of said housing and communicating with one another within said housing, said first channel being adapted for receiving said insulated conductor;

(b) an electrical contact element having first and second opposed end portions, such first end portion being of insulation-piercing type;

(c) an electrical insulator seated in said second channel and circumscribingly supporting said contact element to dispose said first end portion thereof in said first channel for engagement with said conductor and to dispose said second end portion to be accessible exteriorly of said housing;

(d) interconnect means for electrically interconnecting said shield to said housing; and

(e) means movably supported by said housing for effecting displacement of said insulated conductor into said first end portion of said contact element to provide electrical connection therebetween.

4,469,392
OCEAN BOTTOM SEISMIC CABLE CONNECTOR

Gene A. Edgerton; John H. Engel; Henning Ottsen, all of Ventura, Calif.; Henry A. Seal, Arlington, Tex., and Joseph F. Wadsworth, Ojai, Calif., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 19, 1982, Ser. No. 359,963
Int. Cl.³ H01R 13/56
U.S. Cl. 339—117 R 15 Claims

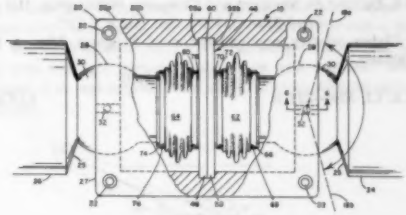
1. A cable connector for connecting marine seismic cables having an electrical conductor and a high tensile strength load transmitting core, comprising:

(a) a housing having spherical sockets provided in opposite ends thereof, said housing being split into two parts which are detachably securable together;

(b) a pair of diametrically opposed grooves in the inner surface of said spherical sockets and extending longitudinally relative to said housing; and

(c) strain relief members attached to said cables having substantially spherical ball portions at each end thereof rotatably positioned within the spherical sockets of said housing; and

(d) a pair of diametrically opposed pockets in the outer surface of said ball portions arranged to register with the grooves of said spherical sockets and a pair of projections

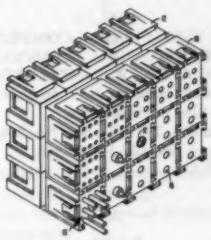


extending from said pockets and projecting into the grooves of said spherical sockets whereby said strain relief members are free to simultaneously rotate about a first axis passing through said projections and about a second axis perpendicular to the first axis as said projections move along said grooves.

4,469,393
MODULAR CONNECTOR

Marshall T. Chewning, Jr., Jarrettsville, and Thomas P. Borgoyn, Randallstown, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1981, Ser. No. 308,319
Int. Cl.³ H01R 9/24
U.S. Cl. 339—198 GA 6 Claims



1. An electrical connector comprising a plurality of interlocking modules each having:

(a) electrical contact means for mating with complementary electrical contact means of another module such that electrical contact is established;

(b) a first surface including a first channel for mating with a complementary channel of another module, said first channel including first and second edge portions extending outwardly substantially parallel to said first surface and a cantilevered resilient locking tab disposed between said first and second edge portions with the free end of said cantilevered resilient locking tab extending above the fixed end of said cantilevered resilient locking tab, said resilient locking tab extending at an acute angle to said first surface;

(c) a second complementary channel member, including a recess, for mating with said first channel member of an adjacent module such that said cantilevered resilient locking tab is depressed beginning near said fixed end as said first and second channel members are slidably mated to a point where said cantilevered resilient locking tab is substantially parallel to said first surface, and thereafter extends into said recess in said adjacent module when said

first and second channels are in the mated position thereby securing adjacent modules together.

4,469,394

PRESS-FIT ELECTRICAL TERMINALS

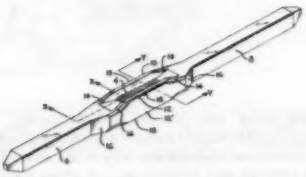
Laurentius M. Verhoeven, Zijtaart, Netherlands, assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1983, Ser. No. 471,737

Claims priority, application United Kingdom, Mar. 4, 1982, 8206460

Int. Cl.³ H01R 9/09

U.S. Cl. 339—221 R **12 Claims**



1. An elongate metal press-fit electrical terminal comprising an electrical terminal portion for electrical interconnection to another electrical component and a press-fit portion for engagement within a recess of an element such as a printed circuit board, said press-fit portion being of generally H-shape in cross-section formed by four complaint fins extending generally parallel to the longitudinal axis of the terminal and interconnected by a central web, two opposed faces of said web being indented with a plurality of parallel corrugations, the valleys of said corrugations extending transversely to said longitudinal axis.

4,469,395

ELECTRICAL TERMINATION COMPRISING A SOFT ALUMINUM LEAD AND A TERMINAL OF HARD ALUMINUM ALLOY BUTT-WELDED THERETO

Moreland P. Bennett, Hickory, N.C., assignor to General Electric Company, King of Prussia, Pa.

Filed Jan. 29, 1982, Ser. No. 344,107

Int. Cl.³ H01R 3/00

U.S. Cl. 339—278 C **6 Claims**

1. A termination for high-current electrical apparatus, comprising:

(a) a lead for the apparatus comprising an elongated strip of relatively soft aluminum having a distal end and an outer edge located at the distal end,

(b) a terminal comprising a plate of relatively hard aluminum-base alloy having an edge facing the outer edge of the strip,

(c) a butt weld between said edges comprising a fillet of aluminum alloy extending across the width of the terminal adjacent said edge of the terminal,

(d) a plurality of holes in said lead adjacent said butt weld, said holes serving to weaken said lead sufficiently in the region of said holes so that the lead in the region of said holes is more susceptible to deformation than said weld as a result of bending forces applied to the termination through said terminal, and in which:

(i) said strip has longitudinal edges that extend along its length, and

(ii) generally V-shaped notches are provided in said longitudinal edges for reducing the resistance of the strip to twisting and edge-bending.

4,469,396

AFOCAL DUAL MAGNIFICATION REFRACTOR TELESCOPES

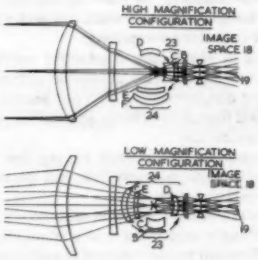
Iain A. Neil, Glasgow, Scotland, assignor to Baar & Stroud Limited, Glasgow, Scotland

Filed Sep. 3, 1981, Ser. No. 299,198

Claims priority, application United Kingdom, Oct. 8, 1980, 8032396

Int. Cl.³ G02B 15/10

U.S. Cl. 350—1.3 **5 Claims**

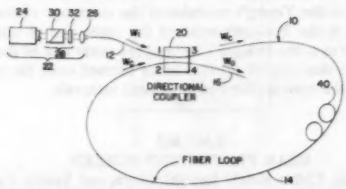


1. An afocal, dual magnification, refractor telescope formed by a fixed-focus, achromatic, objective lens system, a fixed-focus, collimation system, and two different fixed focus, high and low, magnification lens systems, said objective lens system being composed of a primary objective lens element and a secondary objective lens element, said collimation system being composed of a single lens element aligned on a common optical axis with said objective lens system, and said two magnification lens systems being alternatively alignable on said optical axis between said secondary objective lens element and said collimation system and respectively arranged to provide an internal real image, said high magnification lens system being formed by two lens elements and said low magnification lens system being formed by three lens elements, each of the eight lens elements of the telescope being made of a material which has a useful spectral bandpass in the infrared wavelength region and having refractive surfaces intercepting said optical axis, at least one refractive surface of the primary objective lens element being aspheric and each of the refractive surfaces of the other lens elements of the telescope being substantially spherical, the aspheric surface or surfaces possessing only a small degree of asphericity, the secondary objective lens element being negatively powered and having a refractive index equal to or lower than the primary objective lens element which is positively powered and wherein, for the high magnification mode, the telescope has an internal f-number in the airspace between the primary and secondary objective lens elements of less than 1.5.

4,469,397
FIBER OPTIC RESONATOR

Herbert J. Shaw; Marvin Chodorow, both of Stanford, and Loren F. Stokes, Palo Alto, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 29, 1982, Ser. No. 426,890
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.15 **31 Claims**



20. A fiber optic resonator, comprising:

a single, uninterrupted strand of optical fiber;

a fiber optic directional coupler having four ports, namely ports **1**, **2**, **3**, and **4**, said single, uninterrupted strand of fiber extending through all of said ports, said fiber having a loop portion optically connecting ports **2** and **3**, a fiber input portion at port **1** and a fiber output portion at port **4**;

a light source for inputting a continuous lightwave (W_i) into said fiber input portion;

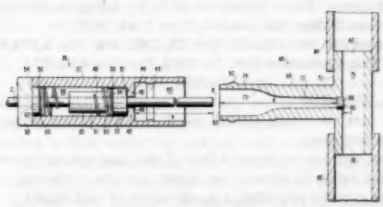
said coupler splitting said input lightwave (W_i) into two components, namely a straight through component (W_{it}), which propagates from port **1** to port **3**, and a cross-coupled component (W_{ic}), which propagates from port **1** to port **4**, said straight through component (W_{it}) providing at least a portion of a circulating wave (W_c) which circulates through said loop portion from port **3** to port **2**, said coupler splitting said circulating wave (W_c), after traversing said loop, into two components, namely a straight through component (W_{ct}) which propagates from port **2** to port **4**, and a cross-coupled component (W_{cc}), which propagates from port **2** to port **3**; and

said cross-coupled input wave component (W_{ic}) destructively interfering with said straight through circulating wave component (W_{ct}), and said cross-coupled circulating wave component (W_{cc}) constructively interfering with said straight through input wave component (W_{it}).

4,469,398
OPTICAL CONNECTOR FOR USE DURING PHOTOMETRIC ANALYSIS

Micheal C. De Baets, Santa Clara, and John M. Sperinde, San Jose, both of Calif., assignors to Oximetrix, Inc., Mountain View, Calif.

Filed Oct. 27, 1981, Ser. No. 315,427
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **15 Claims**

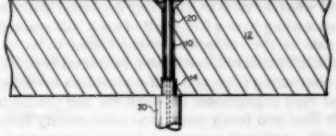


10. An optical connector comprising a rigid tubular member having a flow passage extending therethrough and including end portions adapted to be connected to fluid conduits for transporting fluid such as blood into and out of said passage, said tubular member having a stem section extending at an angle to said flow passage, said stem section having a relatively narrow passage therein for receiving a light transmitting and receiving pipe in close fitting relationship, and a window positioned at the intersection of the flow passage and the passage in the stem section, said window having one face exposed to the fluid in said flow passage and the opposite face exposed at the bottom of the stem section passage for receiving the end of said pipe, and said window comprising an image transferring device with the light pattern received on said one face being transmitted to said opposite face and vice versa without optical distortion.

4,469,399
METHOD OF MAKING AN UNDERSEA, HIGH PRESSURE BULKHEAD PENETRATOR FOR USE WITH FIBER OPTIC CABLES

Steven J. Cowen; James H. Daughtry; Christopher M. Young, all of San Diego, and John T. Redfern, La Jolla, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1981, Ser. No. 335,903
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.20 **7 Claims**



1. A method for making a penetrator capable of optically transmitting through a wall separating a first medium from a higher pressure medium comprising:

providing a bore through the wall having a first side and a second opposite side;

applying wax to one end of a cylindrically-shaped lens;

inserting the cylindrically-shaped lens into the bore, the lens having a length to locate its far end flush with the first side of the wall and the wax applied end within the bore at the second opposite side of the wall;

melting the wax allowing it to flow around the top of the wax applied end of the cylindrically-shaped lens to hold the lens in place;

cooling the melted wax to precisely fix the cylindrically-shaped lens into position wthin the bore and defining a clearance space between the cylindrically-shaped lens and the bore;

potting high strength epoxy resin in the clearance space between the cylindrically-shaped lens and the bore by vacuum drawing resin into the clearance space to assure a uniform bonding of the lens in the bore;

curing the resin retained in the clearance space to secure the lens in a water-tight and gas-tight sealed relationship; and

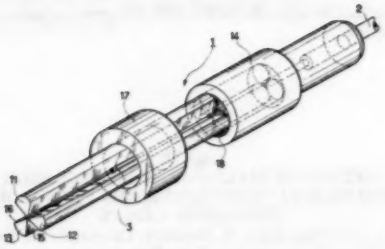
aligning optical fibers on either side of the lens to assure optical signal transfer, the step of alignment includes there being a moveable plate to align the fibers with the lens and the tacking of the plate in place with cyanoacrylate adhesive thereby not disrupting the integrity of the penetrator lens.

4,469,400

CONNECTOR FOR A SINGLE OPTICAL FIBER

Roland Hakoun, Paris, France, assignor to Compagnie Lyonnaise de Transmissions Optiques, Clichy, France

Filed Jun. 18, 1982, Ser. No. 389,796
Claims priority, application France, Jun. 24, 1981, 81 12371
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 4 Claims



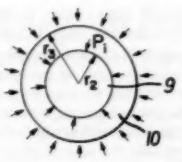
1. A connector for a single optical fiber, comprising two half-connectors adapted to receive respective end portions of two fibers to be connected, and assembly means for securing together with two half-connectors so as to maintain the connection, and wherein each half-connector comprises positioning means for the fiber end portion it receives in the form of three cylindrical rods maintained in side-by-side relationship so as to define between them a central channel into which said fiber end portion is inserted, substantially in contact with each rod in a contact area extending along a generatrix, the improvement wherein each of said rods is formed with two flats, said flats extending over a front half of each half-connector and on each side of the respective contact area so as to define, when said half connectors are joined, an assembly of six side by side rods alternating from said half-connectors forming a plug-and-socket type engagement between the half connectors, the respective fiber end being positioned substantially centrally of said assembly, and said connector further comprising, on the front half of each half-connector, at least one positioning ring surrounding said portions of all of said rods formed with said flats from both half-connectors, and applying radial force to all of said rod portions in common so as to retain said end portions of said fibers in position.

4,469,401

OPTICAL FIBER UNIT FOR OPTICAL SUBMARINE CABLES

Yoshihiko Yamazaki, Yokohama; Hitoshi Yamamoto, Yamato; Kahei Furusawa, Kamifukuoka; Yoshihiro Ejiri, Tokyo, and Makoto Nunokawa, Kawasaki, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,081
Claims priority, application Japan, May 21, 1981, 56-75676
Int. Cl.³ G02B 5/16
U.S. Cl. 350—96.23 4 Claims



1. An optical fiber unit for optical submarine cables, in which glass portions formed by a plurality of optical fibers each having at least one coating layer and twisted together at a required pitch are embedded in a resin layer, characterized in that adjacent two layers of the coating layer and the resin layer are formed of materials which satisfy the following condition;

$$\frac{E_1}{E_2} > \frac{1-\nu_1}{1-\nu_2}$$

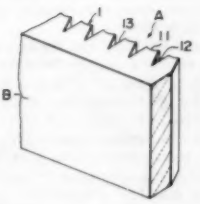
where E_1 is the Young's modulus of the inner one of the two layers, E_2 is the Young's modulus of the outer one of the two layers, ν_1 is the Poisson's ratio of the inner one of the two layers and ν_2 is the Poisson's ratio of the outer one of the two layers, the thus coated portion being formed over the entire length of the optical fibers or at desired intervals.

4,469,402

REAR PROJECTION SCREEN

Yukio Yata, Chiba; Koichi Inagaki, Hoya, and Yoshio Yatabe, Tokyo, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,255
Claims priority, application Japan, Jun. 15, 1981, 56-91896; Dec. 28, 1981, 56-212584
Int. Cl.³ G03B 21/60
U.S. Cl. 350—128 13 Claims



1. A rear projection screen having a viewing side surface, a projection side surface and a medium therebetween and having a plurality of continuous parallel contiguous lenticles formed at least on the viewing side surface so as to form a lenticulated surface thereon each lenticle having a crest and troughs interconnected by flanks, wherein each flank is provided with a total reflection surface so that all light rays impinging thereon from the projection side of the screen in the direction perpendicular to the screen are totally reflected and emanate through at least a portion of said crest of the lenticule without being totally reflected thereby, said crest being provided with a concaved surface formed therein.

4,469,403

LENS SWITCHING SYSTEM FOR USE IN X-RAY INSPECTING DEVICES

David J. Haas, Suffern; Costas Blionas, New York, and Joseph P. Muenzen, Pearl River, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 189,995, Sep. 23, 1980, Pat. No. 4,379,348. This application Oct. 12, 1982, Ser. No. 433,757
Int. Cl.³ G02B 7/14
U.S. Cl. 350—254 9 Claims

1. A lens switching system for X-ray inspection arrangements comprising

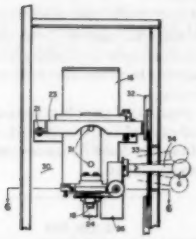
at least two lens systems, a first of said lens systems providing a full-field view of an object and the remaining said lens systems providing magnification of said object,

a rotary plate holding said lens systems, said rotary plate being rotated about an axis parallel to an optical axis,

first means for rotating said rotary plate about said axis to position a magnification lens system into alignment with said optical axis, and

second means for maintaining said rotary plate with said full-field lens system in alignment with said optical axis except when said magnification lens system is used,

wherein said first means includes a control handle operatively connected to said rotary plate for selectively moving said magnification lens system into alignment with said optical axis, said control handle controlling said magnification lens system for movement over portions of said object.



4,469,404

IMAGE POSTURE CONVERTING OPTICAL SYSTEM

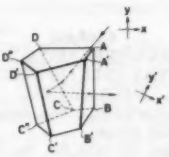
Akio Taira, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,804

Claims priority, application Japan, Apr. 15, 1981, 56-56792

Int. Cl.³ G02B 5/04

U.S. Cl. 350—286 **3 Claims**



1. An image posture-converting optical system for interposition in a light path having an entrance optical axis and an exit optical axis in an instance where the light incident upon said path along said entrance optical axis has an entrance vector in a plane perpendicular to said entrance optical axis, and wherein, due to bending of the light as it travels along the light path, the light as viewed at the exit optical axis would, but for conversion, have an exit vector in a plane perpendicular to said exit optical axis which is angularly displaced from said entrance vector, said optical system comprising:

having a first reflecting surface and a second reflecting surface, these two reflecting surfaces being arranged by respective predetermined oblique angles with respect to said entrance optical axis and said exit optical axis so that the entrance vector is rotated by a predetermined non-zero angle in said plane perpendicular to said exit optical axis when the incident light is reflected in turn by said first and second reflecting surfaces.

4,469,405

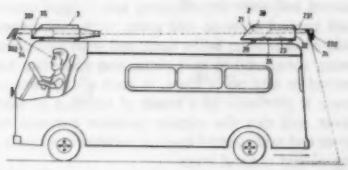
BACK VIEW MIRROR ASSEMBLY

Su Chin-Wun, No. 642-1, Shin Hsin Raod, Ou Jih, Hsiang Taichung Hsien, Taiwan

Filed Sep. 2, 1982, Ser. No. 414,309

Int. Cl.³ G02B 5/08, 5/12, 5/10

U.S. Cl. 350—302 **11 Claims**



1. A back view mirror assembly for a vehicle comprising;

a first casing mounted on the rear top of the body of said vehicle and having a first opening at the rear end thereof;

a first mirror for reflecting the back view of the vehicle;

first means for holding said first mirror movably mounted in said first casing and capable of extending said first mirror out of said first casing and beyond the rear top end of the vehicle body so that the reflection from said first mirror can cause the driver to see the rear view of the vehicle;

first means for operating said first holding means to longitudinally move inward and outward so that said first mirror can be stowed when not in use and can be extended outward when in use.

4,469,406

REAR-VIEW MIRROR FOR A MOTOR VEHICLE

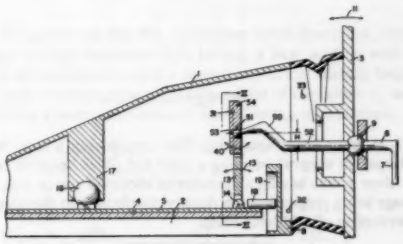
Bernhard Mittelhäuser, No. 57, 3002 Wedemark 2, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 375,822

Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118245

Int. Cl.³ G02B 7/18

U.S. Cl. 350—307 **4 Claims**



1. A rear-view mirror which is operable from the interior of a vehicle and is adjustable about a horizontal axis and a vertical axis via a control lever which is pivotable about a transverse axis and a longitudinal axis, said lever having two ends, namely a first end having a bundle which projects into said vehicle, and a second end remote from said first end; said mirror comprising:

a housing connected to said vehicle and having an opening directed counter to the forward direction of travel of said vehicle, said housing having a base in the vicinity of said vehicle, with said base being provided with a slot;

a mirror body adjustably arranged in said housing and substantially closing said opening thereof;

a first ball joint pivotally connecting said mirror body to said housing in a regin remote from said vehicle;

a pin connected to said mirror body in that region thereof closest to said vehicle, said pin being movable in said slot

of said housing; said first ball joint, and said pin and cooperating slot, permitting pivotal movement of said mirror body about a vertical and horizontal axis;

a pivot lever pivotably connected to said mirror body in the vicinity of said pin thereof;

a plate hingedly connected with said pivot lever, with said second end of said control lever being hingedly connected with said plate; and

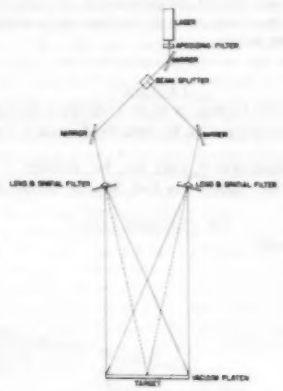
a second ball joint for effecting said hinged connection of said control lever to said plate; with said second end of said control lever being bent, and with said control lever being connected to said plate, and said plate being connected to said pivot lever, in such a way that said pivot lever is pivotable as a result of rotation of said control lever, and that the angular position between said pivot lever and said control lever is variable as a result of pivoting of said control lever.

4,469,407

LASER APODIZING FILTER

James J. Cowan, Lexington, and Andrew B. Holland, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 8, 1982, Ser. No. 346,930
Int. Cl.³ G02B 5/22
U.S. Cl. 350—314 **16 Claims**



1. A laser beam apodizing filter comprising a laser beam transparent support carrying a print out silver image in terms of silver grains having a diameter of about 0.5 μm or less, said image being proportional in density distribution to the intensity distribution of said laser beam.

4,469,408

LIQUID-CRYSTAL DISPLAY HAVING ORIENTING POLYMER WITH FLEXIBLE BRIDGES

Hans Krüger, Munich, and Roland Rubner, Röttenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,628
Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020645
Int. Cl.³ C09K 3/34; G02F 1/13
U.S. Cl. 350—340 **21 Claims**

1. Liquid crystal display with

I. a liquid-crystal layer switchable between two optically different states of a rest state in which the liquid-crystal layer is in a first orientation state and an excited state in which the liquid-crystal layer is in a second optically different orientation state, and

II. two support plates which

(a) enclose the liquid-crystal layer between them, and

(b) carry on their surfaces facing each other respective electrically conducting coatings as electrodes as well as

(c) an orientation layer which faces the liquid-crystal layer, where

(d) at least one of the two orientation layers consists of polymer, the combination therewith that

(e) the polymer layer is liquid-crystalline and

(f) is switchable between two different states of off-state and on-state,

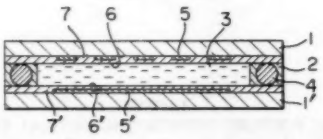
(g) in the process of which it generates the rest state of the liquid-crystal layer in the off-condition and, in the on-condition, at least enhances the excited state of the liquid-crystal layer.

4,469,409

HOMOGENEOUS ALIGNMENT LAYER FOR LIQUID CRYSTAL DISPLAY DEVICE

Fumio Nakano, Hitachi; Kishiro Iwasaki, Hitachiota, and Seiki-chi Tanno, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 18, 1982, Ser. No. 409,058
Claims priority, application Japan, Aug. 21, 1981, 56-130253
Int. Cl.³ G02F 1/13
U.S. Cl. 350—341 **11 Claims**



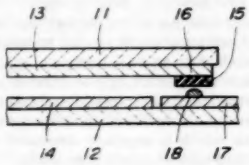
1. A liquid crystal display device which comprises transparent electrode substrates having an aligning coating film of a homogeneous mixture comprising a silanol oligomer modified by an aromatic ring-containing silane group, and an organic polymer at the electrode side.

4,469,410

COMMON TRANSFER CONTACT FOR LIQUID CRYSTAL DISPLAY CELL OR ELECTROCHROMIC DISPLAY CELL

Isao Ikesue, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1978, Ser. No. 919,927
Claims priority, application Japan, Jun. 29, 1977, 52-78115
Int. Cl.³ G02F 1/133, 1/03
U.S. Cl. 350—343 **19 Claims**



1. An electro-optical display cell comprising:

a first conductive substrate having a relatively soft dielectric seal disposed thereon; and

a second conductive substrate having a relatively hard conductive contact projection disposed thereon;

said first and second conductive substrates being compressed together such that said relatively hard contact projection

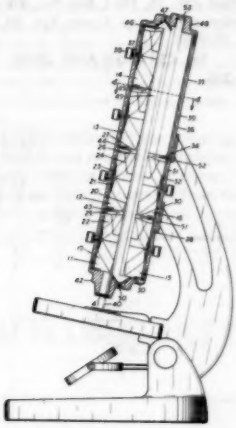
in mutual conductive contact with said substrates to conductively interconnect the latter.

4,469,411

QUADRANT CONICAL-LENS MICROSCOPE

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Aug. 10, 1981, Ser. No. 291,174
Int. Cl.³ G02B *13/18, 21/00*
U.S. Cl. 350—414 **4 Claims**



1. A quadrant stage lens comprising three quadrant component lenses;

(a) with each quadrant component lens being a 90° longitudinal sector of a whole component lens, with each quadrant component lens having one or two quadrant concave or convex conical sections which refract light rays at prescribed angles, with all quadrant conical sections being aligned on a common axis which is parallel to the light rays entering and emanating from the quadrant component lenses, with all surfaces of the quadrant component lenses not used for the refraction and transmission of light rays being opaque.

(b) with the quadrant stage lens which is assembled from three quadrant component lenses being bounded by a cylindrical wall, two plane longitudinal walls extending from the cylindrical wall inward to the common axis of the quadrant component lenses, where the two plane longitudinal walls abut at an angle of 90°, and two basal end walls which are perpendicular to the cylindrical wall and the two plane longitudinal walls and which are located at opposite ends of the quadrant stage lens.

4,469,412

WIDE ANGLE ZOOM LENS

Akira Tajima, and Keiji Ikemori, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

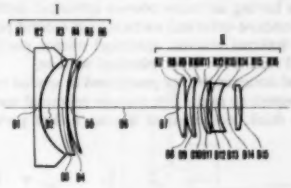
Continuation of Ser. No. 308,562, Oct. 5, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 551,492
Claims priority, application Japan, Oct. 14, 1980, 55-143449
Int. Cl.³ G02B *13/18, 15/14*
U.S. Cl. 350—426 **4 Claims**

1. A wide angle zoom lens, comprising:

from front to rear, a first lens group of negative refractive power and a second lens group of positive refractive power and an air separation between said first and second lens groups;

the air separation between said first lens group and said second lens group being variable to effect zooming from a telephoto and to a wide angle end;

said first lens group, from front to rear, consisting of a first lens having a strong refractive power in the rear surface thereof, a second lens of plastic material and having an absolute value of paraxial focal length at least 30 times the



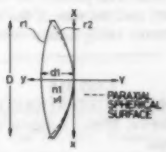
focal length at a zooming position at the wide angle end, said second lens having at least one aspherical surface, and a third lens of meniscus form and of positive refractive power convex towards the front.

4,469,413

ASPHERICAL LENS FOR INDIRECT OPHTHALMOSCOPE

Moriyasu Shirayanagi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1982, Ser. No. 425,583
Claims priority, application Japan, Dec. 22, 1981, 56-208726
Int. Cl.³ A61B *3/12*; G02B *13/18*
U.S. Cl. 350—432 **4 Claims**



1. An aspherical lens for an indirect ophthalmoscope, comprising a single biconvex lens having a first surface with a radius of curvature r_1, and a second aspherical surface facing the examiner and having a paraxial radius of curvature r_2, said lens being constructed to meet the following requirements:

$$-0.65 < \frac{r_2}{r_1} < -0.35 \tag{1}$$

$$1 - 3x^2 < \frac{d^2y}{dx^2} < 1 - 1.4x^3 \left(0 \leqq x \leqq -\frac{D}{2r_2}\right) \tag{2}$$

where D is the effective diameter of the lens, y is the displacement in the direction of an optical axis of an aspherical shape as expressed by a rectangular coordinate system having the origin at the vertex of the second surface and normalized by r_2, and x is the displacement in a direction normal to the optical axis and also normalized by r_2.

4,469,414

RESTRICTIVE OFF-AXIS FIELD OPTICAL SYSTEM

David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 1, 1982, Ser. No. 383,683
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—444 **9 Claims**

1. A restricted off-axis optical system having a broad spec-

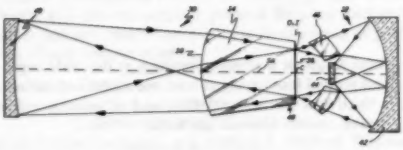
tral range, which includes refractive elements and reflective elements comprising:

a first thick lens element having a first portion and a second portion;

said first portion having an inner planar surface, said second portion having an outer convex spherical surface and an inner concave spherical surface, said second portion having an internal convex, spherical mirror portion on the internal side of its inner spherical surface;

a spherical concave mirror positioned in spaced relationship with respect to said outer convex spherical surface;

a second thick lens element having a first portion and a



second portion positioned in back-to-back relationship with respect to said first lens element; the first portion of the second lens having an inner planar surface, the second portion of the second lens having an outer convex spherical surface and an inner concave spherical surface;

a second spherical concave mirror positioned in spaced relationship with respect to the outer convex spherical surface of the second portion of the second lens;

all of said optical surfaces having nearly optically coincident centers of curvature; and

the sum of the reflective powers of the optical elements being nearly zero and the sum of the refractive powers of the optical elements being nearly zero.

4,469,415

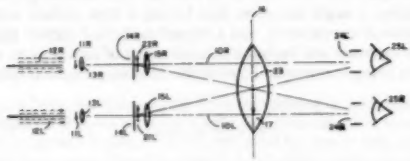
HIGHLY MAGNIFIED STEREO VIEWING

Bruce M. Radl, Billerica, Mass., assignor to Eikonix Corporation, Bedford, Mass.

Filed Dec. 20, 1982, Ser. No. 451,017

Int. Cl.³ G02B *27/22, 21/22*

U.S. Cl. 350—517 **6 Claims**



1. Stereo viewing apparatus comprising,

first and second diffuse screens,

first and second primary magnifying objective lens means for focusing the images of first and second scenes comprising a stereo pair upon said first and second diffuse screens respectively,

field lens means for receiving further magnified superimposed images of the images focused on said first and second diffuse screens,

first and second large aperture objective lens means for focusing the images on said first and second diffuse screens respectively in superimposed relationship upon said field lens means,

and first and second exit pupil means for receiving only respective ones of said first and second superimposed images,

whereby an observer with first and second eyes adjacent to said first and second exit pupil means respectively may observe in stereo a highly magnified image of the scene represented by a stereo pair when located in the object plane of said first and second primary magnifying objective lens means respectively.

4,469,416

AUTOMATIC FOCUSING MEANS FOR AN OPHTHALMOSCOPIC INSTRUMENT

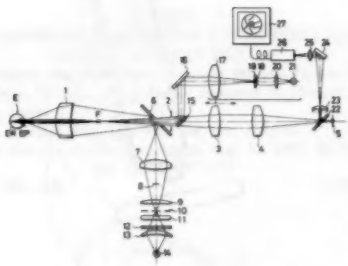
Masaru Isono, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Apr. 21, 1982, Ser. No. 370,491

Claims priority, application Japan, Apr. 24, 1981, 56-62964; Jan. 25, 1982, 57-9705

Int. Cl.³ G03B *3/00, 29/00*

U.S. Cl. 351—206 **12 Claims**



1. An ophthalmoscopic instrument including a main optical system having focusing optical means and adapted for producing an image of a patient's eye fundus on an imaging plane, an illuminating optical system having light source means and adapted for illuminating the patient's eye fundus, a target projecting optical system having a plurality of target marks and adapted for producing images of said target marks on said eye fundus, photoelectric means for producing electric signals based on the images of the target marks formed on the eye fundus, means for receiving said electric signals and detecting distances between the images of the target marks, means for receiving said electric signals and detecting contrast between the signals to discriminate anomalous signals, focus control means for controlling the focusing optical means under informations based on the distances between the target mark images detected by the distance detecting means, means for restricting the focus control means when said contrast detecting means detects the anomalous signal.

4,469,417

RANGE FINDING DEVICE

Makoto Masunaga, Tokyo; Kazuya Hosoe, Machida; Tokuichi Tsunekawa, Yokohama; Yukichi Niwa, Yokohama; Mitsutoshi Ohwada, Yokohama, and Noriyuki Asano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 239,871, Mar. 2, 1981, Pat. No. 4,410,261, which is a continuation of Ser. No. 944,974, Sep. 22, 1978, Pat. No. 4,305,657. This application Jan. 15, 1982, Ser. No. 339,517

Claims priority, application Japan, Sep. 29, 1977, 52/117235

Int. Cl.³ G03B *3/10, 13/20*; G05B *19/27*

U.S. Cl. 354—404 **15 Claims**

3. A focus control system for automatically focusing objective lens means onto an object, comprising:

(A) means for detecting deviation of the adjusted position of the objective lens means from an in-focus position at which the lens means is properly focused onto the object, said deviation detection means providing data on the deviation;

(B) means for driving the objective lens means along an optical axis of the lens means;

(C) means for controlling said driving means on the basis of the deviation data provided by said deviation detection means so as to position the objective lens means at the in-focus position; and

(D) means for controlling the driving speed of said driving means on the basis of the magnitude of the deviation indicated by the deviation data, said speed control means including means for comparing the magnitude of the deviation with a predetermined threshold, and being arranged to cause said driving means to drive the lens means toward the in-focus position at a speed which is determined by the result of the comparison performed by said comparing means according to a function which provides a stepwise change between two different speed levels, said speed control means further including means for selecting the threshold.

10. A system for discriminating the focusing state of an image forming optical means relative to an object, comprising:

(A) first and second sensing means for respectively sensing first and second radiations emanated from the object and for respectively producing first and second electrical

FIG. 11A FIG. 11B FIG. 11C FIG. 11D

indications respectively indicative of distributions of the first and second radiations on said first and second sensing means, the relative positions of the first and second radiation distributions on said first and second sensing means being varied in accordance with the change in the focusing condition of the optical means relative to the object and having a predetermined relation when an in-focus condition of the optical means relative to the object is attained;

(B) detecting means for detecting, on the basis of the first and second electrical indications, the relative positions of the first and second radiation distributions on said first and second sensing means, said detecting means providing data representing said relative positions; and

(C) discriminating means for discriminating the focusing condition of the optical means relative to the object on the basis of the data representing the relative positions, said discriminating means including means for comparing the data with reference data representing the predetermined relation of the relative positions of the first and second radiation distributions on said first and second sensing means and being arranged to discriminate the focusing condition among the in-focus, near focus, and far focus conditions based on the result of the comparison.

4,469,418

SURVEYING METHOD AND APPARATUS

David Stevens, and Hugh Anderson, both of Wiltshire, England, assignors to B.K.S. Surveys Limited, Wiltshire, England

Filed Oct. 20, 1982, Ser. No. 435,347

Claims priority, application United Kingdom, Oct. 27, 1981, 8132383

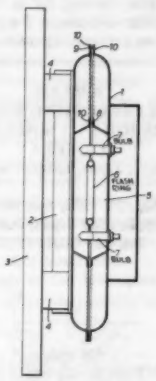
Int. Cl.[3] **G01B** *11/24*; **G01D** *9/42*

U.S. Cl. 354—63 **12 Claims**

1. A method for surveying a structure using a device having a housing defining a chamber having a wall, a first circumferentially extending light transmitting aperture having a predetermined width formed in said wall, a second circumferentially extending light transmitting aperture having a width substantially equal to said predetermined width and spaced outwardly from and coplanar with said first aperture, and a light source, wherein said method comprises:

selectively emitting light into said chamber with said light source;

transmitting said light through said first and second apertures;



forming, without lenses, a substantially planar beam of light with said first and second apertures;

directing said planar beam light onto said structure;

producing with said planar beam of light an illuminated profile of said structure and optically recording said illuminated profile of said structure to provide a recorded image of said illuminated profile.

4,469,419

ELECTRONIC FLASH DEVICE

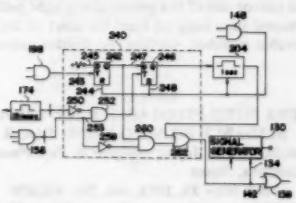
Tokuji Ishida, Daito, and Hiroshi Hosomizu, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 15, 1982, Ser. No. 418,210

Claims priority, application Japan, Sep. 16, 1981, 56-146932

Int. Cl.[3] **G03B** *15/05, 17/18*

U.S. Cl. 354—127.1 **8 Claims**



1. Electronic flash device capable of being combined with a camera having a synchro terminal for transmitting a synchro switch closure signal for flash photography, comprising:

means for emitting flash light to illuminate an object to be photographed;

first means for storing electric power for the flash light emission;

means for initiating said flash light emission;

a first terminal connectable with the camera synchro terminal for actuating said initiating means upon appearance of said synchro switch closure signal at said synchro terminal;

means for terminating the flash light emission in response to attainment of a correct flash photograph;

second means for storing data representing attainment of a correct exposure for flash photography;

means for producing a detecting signal representing that an exposure operation in the camera is completed; and

means for producing an information signal from said data in said second storing means that correct flash exposure has been obtained and in response to said detecting signal, said information signal existing for at least a predetermined time interval after said means for producing detects the completion of an exposure operation.

4,469,420

DEVICE FOR PREVENTING BOUNCE OF THE MOVABLE MIRROR IN A SINGLE LENS REFLEX CAMERA

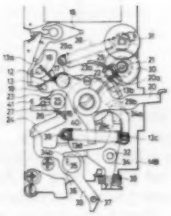
Kimio Uematsu, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,261

Claims priority, application Japan, Jan. 30, 1982, 57-12570

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—153 **6 Claims**



1. A device for preventing bounce of a movable mirror of a single lens reflex camera having the movable mirror movable between a first position located within a phototaking light path for observing an object to be photographed and a second position located outside of the phototaking light path when phototaking is effected, a drive member to drive the mirror in response to the release operation, from the first position to the second position, and a focal plane shutter to open and close an aperture for an image plane, the device comprising a movable member arranged to move a predetermined distance in response to the drive of the mirror, the movable member forcibly moving the mirror out of the phototaking light path and, after a predetermined time interval from the start of the movement of said movable member, starting the shutter release.

4,469,421

CAMERA WITH PIVOTABLE BACK DOOR AND SLIDABLE FILM LOADING DOOR

Kazuo Kamata, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 25, 1983, Ser. No. 498,099

Claims priority, application Japan, May 28, 1982, 57-78760[U]; Aug. 19, 1982, 57-125390[U]

Int. Cl.³ G03B *1/00, 17/02*

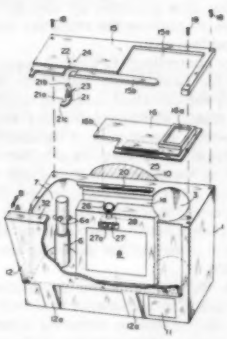
U.S. Cl. 354—212 **9 Claims**

1. In a camera of the type in which a magazine containing a roll of strip film is inserted axially into a film loading chamber in the camera while an elongated film leader previously drawn out from the magazine is inserted into a guideway disposed between a film pressure plate and the body of the camera; the improvement comprising:

a film loading door slidably mounted for rectilinear movement on and along the bottom of said camera body for opening and closing the bottom of said film chamber;

a back door pivotably mounted at the back of said camera body for opening and closing said guideway; and

a latching member for latching said back door in its closed position thereby closing said guideway, said latching member releasing said back door responsive to rectilinear



movement of said film loading door to its open position thereby opening said film loading chamber.

4,469,422

ELECTRIC CONNECTOR FOR CAMERA

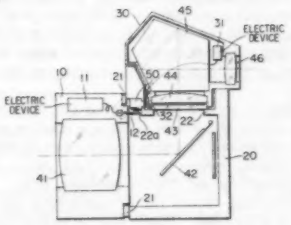
Makoto Kimura; Naoki Tomino, both of Tokyo; Kenichi Magariyama, Yokohama, and Yoshiharu Shiokama, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,256

Claims priority, application Japan, Oct. 19, 1981, 56-166561

Int. Cl.³ G03B *17/14*

U.S. Cl. 354—286 **3 Claims**



1. In a camera having a housing and a mount disposed on a front portion of the housing for receiving a lens barrel and a holder disposed on an upper portion of the housing for supporting a finder system, both the lens barrel and the finder system being exchangeable and each having a built-in electric device, the improvement comprising:

means for electrically connecting the electric device in said lens barrel and the electric device in said finder system;

said electric connection means being disposed between said mount and said holder and having first and second contacts;

said first contact being connectable to the electric device in said lens barrel when the latter is mounted on said mount;

said second contact being in connection with said first contact and connectable to the electric device in said finder system when the latter is mounted on said holder; and

said electric connection means further including a frame member which is arranged to pass through said camera housing from said front portion to said upper portion, said first contact being exposed from one surface of said frame member, said second contact being exposed from another surface of said frame member, and means for electrically

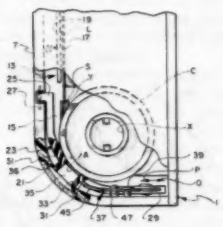
connecting directly said first contact and said second contact.

4,469,423

FILM LIGHT SHIELD

Richard J. Bresson, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,682
Int. Cl.³ G03B 17/02
U.S. Cl. 354—288 **7 Claims**



1. In a photographic camera adapted to receive a film cartridge having a film-related information area, the combination comprising:

a camera back having a window for viewing the information area;

means connected to said camera back for supporting film from the cartridge;

a light-blocking member, said member including a first portion secured to said camera back at a location between said window and said film supporting means and a second portion movable against the cartridge; and

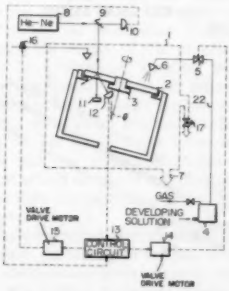
means for moving said second portion against the cartridge at a location between its information area and the film, whereby said light-blocking member connects said camera back and the cartridge to prevent light entering said window from reaching the film.

4,469,424

METHOD AND SYSTEM FOR DEVELOPING A PHOTO-RESIST MATERIAL USED AS A RECORDING MEDIUM

Fumio Matsui; Mitsuaki Sashida; Toshihiro Komaki, and Atsushi Yoshizawa, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 396,073
Claims priority, application Japan, Jul. 8, 1981, 56-107431; Jul. 17, 1981, 56-112556
Int. Cl.³ G03D 3/06
U.S. Cl. 354—298 **8 Claims**



1. A method for developing a photo-resist material of sensitive layer formed on a substantially transparent base of a recording disc, the sensitive layer having been exposed to a recording energy beam modulated in accordance with information to be recorded, the method comprising the steps of:

rotating said recording disc around an axis inclined with respect to the direction of gravity by a predetermined degree;

supplying a developing solution on the sensitive layer in atomized form so as to remove the exposed portions of the photo-resist material to form a series of pits which respresents the information to be recorded;

supplying a monitoring energy beam of a predetermined wavelength on the sensitive layer of the base being developed, at a point of said sensitive layer higher than a portion on which the developing solution is supplied, and at an angle of incidence greater or smaller than 90°;

detecting the intensity of a diffraction beam of said monitoring energy beam having passed through the pits, and producing a diffraction intensity signal proportional to the intensity of diffraction beam; and

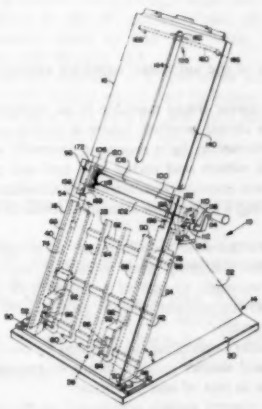
controlling the supply of the developing solution in accordance with said diffraction intensity signal.

4,469,425

PHOTOGRAPHIC FILM PROCESSING APPARATUS

Vincent L. Cocco, Wakefield, and Philip R. Norris, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 9, 1983, Ser. No. 493,014
Int. Cl.³ G03D 3/10
U.S. Cl. 354—310 **18 Claims**



1. Processing apparatus for immersion treating a film unit with a processing liquid and thereafter removing excess liquid from the treated film unit, said apparatus comprising:

a processing tank configured to be filled with a volume of processing liquid sufficient to allow such a film unit to be immersed in the liquid for treatment;

a pair of rotatable pressure-applying rollers, mounted above the level of the liquid in said tank, between which the treated film unit is adapted to be advanced for removing the treated film unit from said tank and for squeegeeing excess liquid therefrom;

a movable film carrier located in said tank for movement between a first position when it receives a film unit inserted into said tank and supports the film unit at a submerged immersion treatment position within the liquid and a second position wherein it locates an end of the

treated film unit above the level of the liquid and feeds it into the bite of said rollers; and

means responsive to rotating said rollers in a direction to advance the film unit therebetween for effecting movement of said film carrier from said first to said second position to feed the liquid treated film unit into said rollers.

4,469,426

CAMERA OF AUTOMATIC EXPOSURE CONTROL TYPE

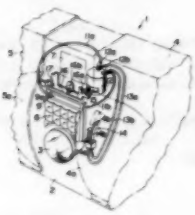
Hiroki Onda, and Yuichi Torikoshi, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jan. 8, 1982, Ser. No. 338,160

Claims priority, application Japan, Feb. 10, 1981, 56-17456[U]

Int. Cl.³ G03B *7/081, 17/02*

U.S. Cl. 354—447 **5 Claims**



1. A camera of the automatic exposure control type, comprising:

a protective cover freely movable in an unimpeded fashion between a closed position where it covers a taking lens and a photometric, light receiving assembly and an open position in which said taking lens and said photometric assembly are uncovered substantially simultaneously, said cover having a projection extending towards said camera body;

an exposure controller responsive to an output from said photometric assembly and including movable means which is movable to one of a plurality of positions in response to the amount of light received by said photometric assembly;

movable shutter control means actuated by a shutter button to cause said shutter control means to engage said movable means in one of said positions;

an exposure control switch positioned on the external surface of said camera body and between said camera body and said movable cover are connected to said exposure controller and adapted to be actuated by the projection on the cover upon the movement of said protective cover to said open position thereby causing said photometric assembly to receive light and operate said exposure controller to cause said moveable means to move to one of said positions to be engaged by said shutter control means to control the camera exposures;

said exposure control switch being covered by said movable cover regardless of the position of said movable cover; and

said movable shutter control means including means for arresting movement of the shutter release button when said exposure controller moves said movable means to a position indicting the condition for a photographing operation is insufficient.

4,469,427

DEVELOPING STATION FOR DEVELOPING CHARGE IMAGES GENERATED ON A CHARGE IMAGE CARRIER

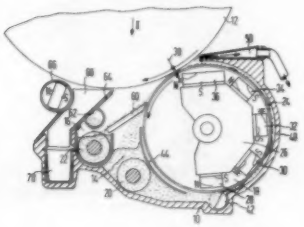
Walter Kopp, Taufkirchen, and Karl-Heinz Saalmueller, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,834

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117296

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DD **22 Claims**



1. In a developer station having a housing containing a body of developer mix including toner and carrier particles in a first zone and a rotary developer drum in an adjacent second zone for conducting developer mix from said mix body to an inking gap between said drum and a charge image carrier passing along said housing for developing the charge images generatied on said carrier apparatus comprising:

means for preventing the emergence of toner dust from said housing first zone,

means for preventing toner deposits from forming on the walls of said housing in said first and second zones, and a protection plate disposed between said mix body and said developer drum for preventing said mix body from pressing against said developer drum, said plate defining a clearance gap with the circumference of said developer drum which expands in the direction of rotation of said developer drum.

4,469,428

CORONA DISCHARGING APPARATUS USED IN AN ELECTROSTATIC PHOTOGRAPHIC COPYING MACHINE

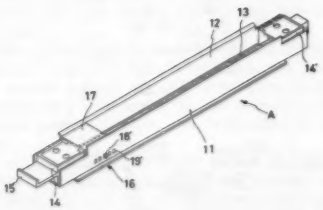
Masahiro Yoshioka; Masahiro Murakami, both of Osaka; Eiji Tsutsui, Amagasaki, and Noriyuki Iwao, Kobe, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1982, Ser. No. 402,329

Claims priority, application Japan, Aug. 8, 1981, 56-118484[U]; Aug. 8, 1981, 56-118485[U]

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 CH **13 Claims**



1. A corona discharging apparatus for use in an electrostatic photographic copying machine, said apparatus comprising:

an elongated shield case having an open side;

a corona discharging wire fixedly positioned to extend longitudinally within said shield case, such that electrostatic charge from said wire is directed through said open side of said shield case;

means for adjusting the width of electrostatic charge directed from said open side of said shield case, said adjusting means comprising a shield cover formed of an electrically insulative material, and means for revovably mounting said shield cover, at a selected position of a plurality of longitudinally adjustably spaced positions, on one longitudinal end of said shield case, such that said shield cover extends over a respective portion of said open side and covers a corresponding portion of the length of said wire;

said shield case having, on a side thereof opposite said open side, a longitudinal rail member;

a longitudinal rail receiving member having a configuration complementary to the configuration of said rail member, said rail member being mounted for longitudinal sliding movement within said rail receiving member;

means for mounting said rail receiving member on a fixed wall of an electrostatic photographic copying machine such that said open side of said shield case is directed toward the periphery of a photsensitive drum of the copying machine and such that the longitudinal dimension of said shield case extends substantially parallel to the axis of the drum, said rail receiving member mounting means including means for selectively adjusting the position of said rail receiving member, and thereby of said shield case and said wire, in directions radially of the drum; and

handle means connected to said shield case to enable said shield case to be selectively moved longitudinally with respect to said rail receiving member.

4,469,429

ELECTROPHOTOGRAPHIC REPRODUCING MACHINE

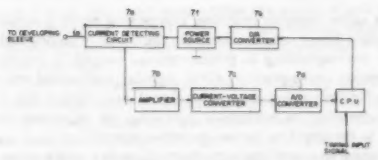
Yukio Okamoto; Noriyoshi Tarumi, and Hisashi Ashida, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 25, 1982, Ser. No. 411,572

Claims priority, application Japan, Sep. 2, 1981, 56-137047

Int. Cl.³ G03G *13/09, 15/00*

U.S. Cl. 355—3 DD **7 Claims**



1. In an electrophotographic reproducing machine in which an electrostatic latent image is formed by projecting a document image on the surface of an electrophotographic photosensitive member, and the electrostatic latent image is developed by supplying the surface of said photosensitive member with developer by a developer carrying means capable of being applied with a biasing voltage, the improvement characterized in that the biasing voltage applied to said developer carrying means is set at such a level as to substantially nullify the developing current which flows between said developer carrying means and said surface of photosensitive member when the portion of said surface of said photosensitive member applied with the light corresponding to a white blank of document is developed.

5. An electrophotographic reproducing machine according to claim 4, wherein the setting of the bias voltage is in accordance with an electrostatic latent image formed as a result of the projection of a leading projecting portion provided on a document glass plate in contact with the document mounting position, the projection of said leading projecting portion being made in advance of the projection of the image on the document to form said electrostatic latent image of a potential substantially equal to that corresponding to the white blank portion of said document.

4,469,430

LIGHT BEAM PRINTER

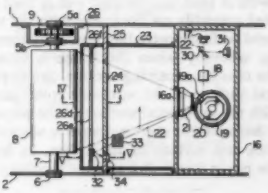
Isamu Terashima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,585

Claims priority, application Japan, Nov. 30, 1981, 56-190876; Dec. 15, 1981, 56-200853

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **8 Claims**



1. A light beam printer comprising:

an electrostatic recording unit for selectively discharging charges on a surface of a uniformly charged photoconductive photosensitive body to form an electrostatic latent image and developing the electrostatic image by fine particles of toner;

an exposure optical system isolated from said electrostatic recording unit and having a light beam path for deflecting a light beam to scan the surface of said photoconductive photosensitive body by said light beam to selectively discharge said charges; and

a dust-proof box disposed at a light beam emitting port of said exposure optical system and including a wall having a slit forming a light path for said light beam and a dust sink system formed inside of said wall.

4,469,431

ELECTROSTATIC COPYING APPARATUS WITH SHEET FEEDER

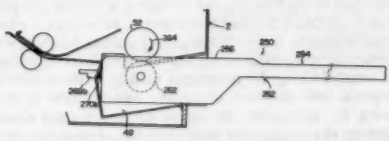
Hideo Miyoshi, Habikino; Tadashi Umeda, Yamato Takada, and Takashi Aoki, Kusatsu, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 250,829, Apr. 3, 1981,. This application Feb. 14, 1983, Ser. No. 465,970

Claims priority, application Japan, Apr. 15, 1980, 55/49497

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 SH **2 Claims**



1. A mechanism for positioning a copying paper manually, said positioning mechanism being applied to an electrostatic copying apparatus including a copying paper transfer unit comprising a paper feed mechanism comprised of a cassette-receiving section formed at one end portion of a housing of the electrostatic copying apparatus for detachably receiving a box-like copying paper cassette having at least a part of its top surface being opened and including a plurality of copying paper sheets of predetermined size in the stacked state and at

least one paper feed roller which is mounted rotatably to an upper portion of the cassette-receiving section and which comes into engagement with the topmost copying paper in the stacked copying paper sheets in the copying paper cassette through said opening of the copying paper cassette mounted to the cassette-receiving section and by being rotationally driven, feeds the copying paper sheets one by one from the copying paper cassette, and said manually positioning mechanism being capable of positioning an arbitrary copying paper with respect to the feed roller by a manual operation so that the copying paper is fed by the rotation of the feed roller, instead of mounting the copying paper cassette to the cassette-receiving section and automatically feeding the copying paper sheet in the copying paper cassette; characterized in that said manually positioning mechanism includes a frame capable of being detachably mounted to the cassette-receiving section and having a guide top surface with at least one opening and at least one auxiliary roller mounted rotatably on the frame with the upper portion of its peripheral surface protruding upwardly through and past said opening, whereby when the frame is mounted as prescribed to the cassette-receiving section, the upper portion of the peripheral surface of the auxiliary roller comes into engagement with the peripheral surface of the paper feed roller, and when in this state, the copying paper is advanced manually over the guide top surface of the frame, its leading end is nipped by the paper feed roller and the auxiliary roller.

4,469,432

ELECTROSTATIC COPYING APPARATUS WITH COOLING SYSTEM

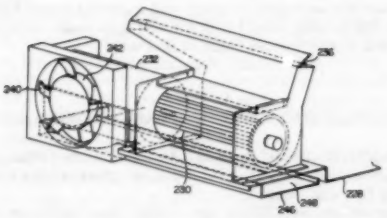
Hideo Miyoshi, Habikino; Tadashi Umeda, Yamato Takada, and Takashi Aoki, Kusatsu, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Division of Ser. No. 250,829, Apr. 3, 1981,. This application Feb. 14, 1983, Ser. No. 465,973

Claims priority, application Japan, Apr. 15, 1980, 55/49497

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **2 Claims**



1. In an electrostatic copying apparatus comprising a housing, a rotary drum mounted rotatably within the housing and having a photosensitive member on at least a part of its peripheral surface, an original-support mechanism disposed on the top surface of the housing and including a transparent plate on which to place an original document to be copied, a charging corona-discharge device for applying corona discharge to the photosensitive member in a latent electrostatic image-forming zone located along the peripheral surface of the rotary drum, an optical unit disposed above the rotary drum within the housing for projecting the image of the original document placed on the transparent plate onto the photosensitive member in the latent electrostatic image-forming zone, a copying paper transfer unit for transferring a copying paper through a transfer passage which extends from one end portion of the housing to its other end in the lower portion of the housing through a transfer zone located below the rotary drum, along the peripheral surface of the rotary drum and downstream of the latent electrostatic image-forming zone viewed in the rotating direction of the rotary drum, and a fixing mechanism disposed downstream of the transfer zone within the transfer passage and having an electric heater; the improvement wherein a partitioning wall dividing the inside of the housing into an upper portion having the optical unit and a lower portion having the fixing mechanism is disposed at that part of the housing which is on the side of said other end at least from the rotary drum, and said other portion of the housing has provided therein a first fan located within said upper portion and drivingly connected to a main electric motor drivingly connected to the rotary drum and a second fan located bridging the said upper and lower portions and drivingly connected to another auxiliary motor and adapted to discharge the air in said upper and lower portions from said other end of the housing, whereby when a main switch of the electrostatic copying apparatus is closed, supply of an electric current to the electric heater of the fixing mechanism can be started and simultaneously an electric current is supplied to the auxiliary motor, and when the copying process is actually started after the closing of the main switch, supply of an electric current to the main electric motor is started.

4,469,433

COLOR COPYING MACHINE USING SIGNAL CONVERSION

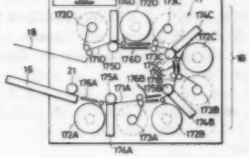
Masami Kurata, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,396

Claims priority, application Japan, Oct. 30, 1981, 56-172892

Int. Cl.³ G03G *15/01*

U.S. Cl. 355—4 **8 Claims**



1. A color copying machine, comprising reading means for separating image information from each area of an original into colors corresponding to predetermined recording colors and for forming corresponding video signals, preferential selection means for converting each video signal into a binary signal and for performing an arithmetic operation on each said binary signal to thereby key the image information from each area of the original to one of the recording colors or a white color, and means for reproducing the original with the colors selected by said preferential circuit.

4,469,434

CLEANING APPARATUS FOR ELECTROPHOTOGRAPHY

Yoshio Yamazaki; Kouichi Gunzi, and Shigeru Inowa, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,869

Claims priority, application Japan, Jan. 27, 1981, 56-11332

Int. Cl.³ G03G *21/00*

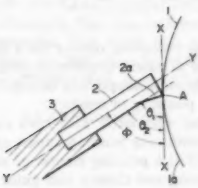
U.S. Cl. 355—15 **15 Claims**

1. In a cleaning apparatus for an electrophotographic copying machine wherein an electrostatic image formed on the surface of a moving toner image retaining member is moved past a series of processing stations including a developing station at which said latent image is developed with toner to form a toner image, a transfer station at which said toner image is transferred to copying material and a cleaning station for

removing residual toner from the surface of said toner image retaining member, the portion of said toner image retaining member before it passes through said cleaning station comprising a pre-cleaning side thereof, said cleaning apparatus being at said cleaning station;

said cleaning apparatus comprising (i) an elongated elastic cleaning blade for removing residual toner from the surface of said toner image retaining member after transfer of said toner image to said copying material, said elastic cleaning blade having a main body portion having a longitudinal axis and two opposite ends, one end of said elastic cleaning blade having an integral free end having a cleaning edge, and (ii) a holding means arranged along a given axis for supporting the opposite end of said elastic cleaning blade and for urging said elastic cleaning blade against the surface of said toner image retaining member such that said cleaning edge is disposed in resilient contact against the surface of said toner image retaining member and such that a surface portion of the blade faces the pre-cleaning side of said toner image retaining member;

said one free end of said elastic cleaning blade having a



protuberance extending therefrom, said protuberance extending outwardly from the main portion of said blade in a direction perpendicular to the axis of said blade;

said cleaning edge of said elastic cleaning blade comprising a ridgeline of said protuberance which is kept in resilient contact against the surface of said toner image retaining member by said holding means;

said elastic cleaning blade being held by said holding means such that, at the pre-cleaning side of said toner image retaining member, the angle θ_1 between at least one surface portion of the edge of said blade facing said pre-cleaning side of said toner image retaining member and a tangent line at the contact point of said cleaning edge with the surface of the toner image retaining member is less than $\pi/2$; and

the angle of intersection ϕ, at the pre-cleaning side of said toner image retaining member, subtended by the axis of said holding means and a tangent line at the contact point of said cleaning edge with the surface of the toner image retaining member satisfying the following relation:

$$0<\phi<\pi/2.$$

4,469,435

COMBINATION CHARGING/CLEANING ARRANGEMENT FOR COPIER

Takefumi Nosaki, and Masahiro Hosoya, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 16, 1982, Ser. No. 418,834

Claims priority, application Japan, Oct. 28, 1981, 56-172276

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—15 **10 Claims**

1. An electrostatic copying apparatus comprising:

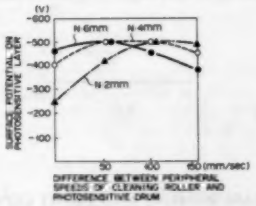
a photosensitive body rotatable in one direction and having a chargeable surface;

first charging means for charging said surface;

cleaning means for cleaning said surface by recovering any developer remaining thereon after a copying operation, said cleaning means and first charging means together including a first common rotatable roller, said first common rotatable roller including an electrically resistive contactor having a number of pliable hairs implanted on the outer periphery of the first common rotatable roller, said hairs being in contact with said surface;

first driving means for rotating the first common rotatable roller;

voltage applying means for applying voltage between the first common rotatable roller and said photosensitive body, said voltage applying means including D.C. and A.C. power sources for applying D.C. and A.C. voltages



between the hairs and said photosensitive body, the hairs applying electrostatic charge to said surface and electrostatically attracting the developer remaining on said surface to clean it; and

recovering means for recovering the developer attached to the cleaning means, said recovering means including a recovery roller having a dielectric layer which is formed on the outer peripheral surface thereof and is in contact with said hairs, and second charging means for charging the dielectric layer to attract the developer held between the hairs of the first common rotatable roller to the recovery roller of the recovering means.

4,469,436

RECIRCULATION DOCUMENT HANDLING METHODS AND APPARATUS AND COPIERS INCORPORATING SUCH APPARATUS

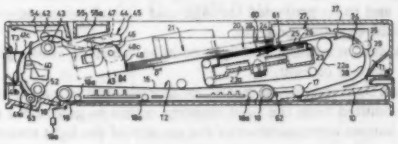
John A. Jones, Gr. Linford, Milton Keynes, and Michael S. West, Wigginton, Near Tring, both of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1982, Ser. No. 437,780

Claims priority, application United Kingdom, Nov. 6, 1981, 8133512

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—51 **6 Claims**



3. In a recirculating document handling apparatus including document storage means for stacking and restacking a set of plural document sheets and document feeding means for feeding those document sheets from the bottom of a stack thereof in said storage means to the platen of a copier and document restacking means for returning those document sheets from the platen and restacking them on top of said stack in said storage means, for seriatim percollation recirculative copying of the document sheets after they have restacked, the improvement comprising:

alternative large document recirculation means for plurally

immediately recirculating a single long document sheet which is longer than said document storage means for making plural sequential copies thereof,

said large document recirculation means including diverter means associated with said restacking means, said diverter means being repositionable for said long document sheet so as to intercept the normal document return path through said document restacking means into said storage means for feeding said long document sheet in a different path over rather than into said storage means directly from said restacking means into said document sheet feeding means without stacking for immediate and continuous recirculation of said single long document sheet.

4,469,437

LIGHT MEASUREMENT AND LIGHT CONTROL DATA CALCULATION DEVICE FOR A PHOTOGRAPHIC ENLARGER

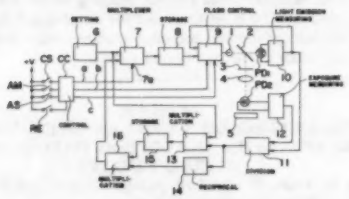
Yoshio Yuasa, Kawachinagano; Hidetoshi Yasumoto, Tondabayashi; Kazuhiko Naruse, Nabari; Nobukazu Kawagoe, Sakai, and Masahito Inaba, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 1, 1983, Ser. No. 471,009

Claims priority, application Japan, Mar. 2, 1982, 57-33245

Int. Cl.³ G03B *27/74, 27/80*

U.S. Cl. 355—68 **25 Claims**



1. In a photographic enlarger including a printing light source, an optical system for projecting an image of an original film onto an exposure plane where a printing paper is to be placed, a light measuring and control data calculating device comprising:

light emitting means for emitting light to illuminate said film and to be projected through said optical system towards the exposure position;

means for causing said light emitting means to emit a given amount of light;

first light measuring means for directly measuring the light emitted from the light emitting means to generate a first output representative of the amount of the light measurement;

second light measuring means for measuring at said exposure plane, the light from the light emitting means through said optical system to generate a second output representative of the light measurement;

setting means for manually setting a datum of a light amount to be emitted from the printing light source to generate a third output representative of the set datum; and

calculation means for calculating an amount of light to be emitted from the printing light source in the actual printing operation of said enlarger, said calculation being made with said first, second and third outputs.

4,469,438

PRINT MASK SWITCHING DEVICE

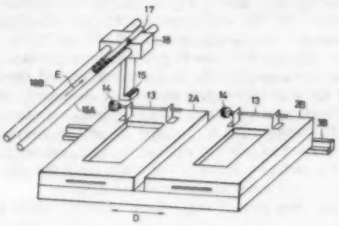
Koozi Itikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1983, Ser. No. 467,054

Claims priority, application Japan, Feb. 17, 1982, 57-21186[U]

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—74 **8 Claims**



1. A print mask switching device for a photographing unit having a plurality of masks of different size, comprising:

a movable print mask supporting board for detachably supporting said plurality of masks;

a guide member associated with each of said plurality of masks for positioning printing paper; and

means provided at a printing station of said photographing unit for opening and closing said guide member.

4,469,439

PROCESS AND APPARATUS FOR PLOTTING THE OXYGEN EQUILIBRIUM CURVES OF BLOOD OR HEMOGLOBIN SOLUTIONS

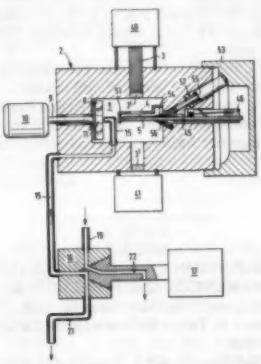
Klaus Gersonde, Preusweg 69, and Hinrich Sick, Lemierserstr. 4, both of D-5100 Aachen, Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,504

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037962

Int. Cl.³ G01N *33/48*

U.S. Cl. 356—41 **12 Claims**



1. In a process of plotting an equilibrium curve representing the relation between an oxygen saturation value of a blood or hemoglobin sample in form of a thin film on a light-transparent support as a function of the partial oxygen pressure in a reaction gas supplied to a measuring space, each oxygen saturation value corresponding to a predetermined light absorption parameter of said sample,

the steps comprising

placing said sample into said space,

oxygenating said sample with an oxygen-containing gas having a predetermined oxygen partial pressure until the sample is substantially saturated with oxygen,

thereafter supplying a deoxygenating gas to said space at a controlled rate, so as to decrease said partial oxygen pressure exponentially,

determining the partial oxygen pressure on the basis of the amount of deoxygenating gas supplied to said space and mixed with said reaction gas, and

simultaneously measuring the light absorption parameter of said sample, whereby said equilibrium curve may be plotted from the oxygen saturation values of said sample corresponding to respective measured light absorption parameters thereof.

4,469,440

SHORT-EXPOSURE TOMOSYNTHESIS APPARATUS FOR THE FORMATION OF LAYER IMAGES WITH A LOW ARTEFACT-CONTENT

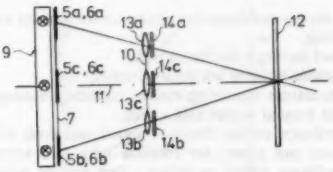
William J. Dallas, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,636

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047889

Int. Cl.[3] **G06K** *9/58*

U.S. Cl. 356—71 **19 Claims**



1. An apparatus for forming images of a layer of an object from perspective images recorded by an array of radiation sources at different positions, said apparatus comprising:

an illumination device for emitting light, said device being arranged to pass light through the recorded perspective images;

a detector having a light-sensitive surface; and

a planar imaging matrix arranged to be illuminated by the light from the illumination device which passes through the recorded perspective images, said matrix comprising a plurality of imaging elements having centers, said matrix having a center and an optical axis extending through the center of the matrix perpendicular to the matrix plane, said matrix functioning, in operation, to form superimposed images of the recorded perspective images on the detector surface;

characterized in that the apparatus further comprises a plurality of deflection elements, each deflection element being arranged in front of or behind a corresponding imaging element, each deflection element functioning to blur the image formed by its corresponding imaging element, said blur being in a pattern having one major direction, each deflection element being arranged so that the major direction projected onto the matrix plane is substantially perpendicular to a straight line between the optical axis of the imaging matrix and the center of the corresponding imaging element, each imaging element being arranged so that the major directions of the deflection elements subtend substantially equal angles with respect to each other.

4,469,441

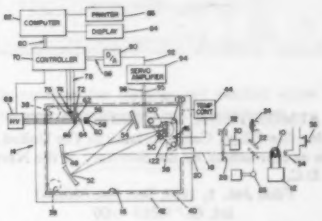
SCANNING MONOCHROMATOR SYSTEM WITH DIRECT COUPLED DISPERSING ELEMENT-ELECTROMAGNETIC DRIVE TRANSDUCER ASSEMBLY

John A. Bernier, Lexington; Garry C. Kunselman, Stow, and Karl W. Kaltenbach, Newtonville, all of Mass., assignors to Allied Corporation, Morristown, N.J.

Filed Mar. 4, 1982, Ser. No. 354,725

Int. Cl.[3] **G01J** *3/18;* **G01N** *21/73*

U.S. Cl. 356—316 **21 Claims**



1. A scanning monochromator system comprising a housing, structure in said housing defining an entrance aperture, structure in said housing defining an exit aperture, a radiation dispersing component in said housing arranged to disperse radiation passing through said entrance aperture into a spectrum for transmission towards said exit aperture, an electromagnetic drive transducer, said dispersing component being directly coupled to said electromagnetic drive transducer, and support structure for mounting the assembly of a rotary component of said drive transducer and said dispersing component for rotation as a unit about a stationary axis that is perpendicular to the optical axis of the system so that a selected portion of the radiation dispersed by said dispersing component is passed through said exit aperture, said support structure including first adjustment means for rotating said assembly about its axis of rotation, and a second adjustment means for tilting said assembly about a fixed pivot offset from the assembly axis, said drive transducer being adapted to move said selected portion of dispersed radiation at said exit aperture over a wavelength range of at least 3000 angstroms.

4,469,442

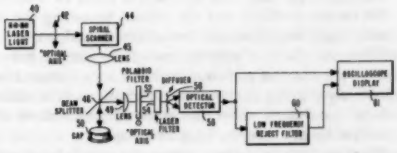
DETECTING IRREGULARITIES IN A COATING ON A SUBSTRATE

Frederick R. Reich, Richland, Wash., assignor to Japan Crown Cork Co., Ltd., Japan

Filed Jan. 11, 1982, Ser. No. 338,384

Int. Cl.[3] **G01N** *21/21*

U.S. Cl. 356—364 **33 Claims**



1. A method of detecting irregularities in a coating on a substrate having a principal plane, which coating includes optical scattering centers, said method comprising the steps of:

directing polarized electromagnetic radiation onto the coating at a nonzero angle to the principal plane such that the radiation incident on the substrate is reflected with its original polarization and radiation incident on the scatter-

ing centers is scattered, thereby depolarizing the scattered radiation;

transmitting the reflected and scattered radiation through an element for removing the reflected radiation;

receiving the transmitted scattered radiation;

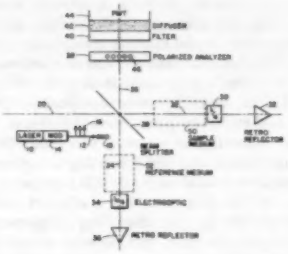
analyzing the received radiation to detect the presence of irregularities in the coating by detecting intensity minima of the transmitted radiation.

4,469,443

ATMOSPHERIC TRANSMISSOMETER

Myer Geller, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 1, 1982, Ser. No. 383,867
Int. Cl.³ G01J *4/00*
U.S. Cl. 356—364 **24 Claims**



5. A method for the selective measurement of the optical intensities of a sample beam having traversed a sample medium, a backscattered beam having been backscattered by the sample medium, a first composite beam composed of the sample beam plus a reference beam having traversed a reference medium, and a second composite beam composed of the backscattered beam plus the reference beam, which comprises:

selective switching the plane of polarization of a collimated, linearly polarized source beam from a first plane to a second orthogonal plane, both planes being parallel to the line of propagation of the source beam;

splitting the source beam into two beams, the first being further physically divided by the sample medium into the backscattered beam and the sample beam as it traverses the sample medium, and the second becoming the reference beam as it traverses the reference medium;

rotating the plane of polarization of the sample beam 90° from the plane of polarization of the backscattered beam;

selectively aligning the plane of polarization of the reference beam parallel to either the plane of polarization of the sample beam or the backscattered beam;

redirecting the backscattered beam, the sample beam and the reference beam in a manner that they are brought together and made colinear in a combined beam;

passing the combined beam through a means for polarization-analyzing which allows transmission of only that portion with the plane of polarization aligned in a predetermined direction; and

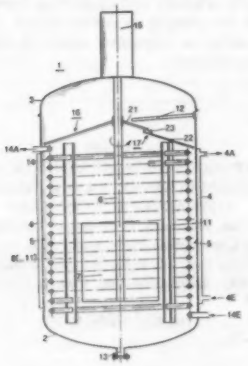
detecting and measuring the intensity of that portion of the combined beam passed after the polarization analyzing.

4,469,444

MIXING AND DEGASSING APPARATUS FOR VISCOUS SUBSTANCES

Paul Gmeiner, Lieli, and Gustav Oesch, Zurich, both of Switzerland, assignors to Micafil AG, Zurich, Switzerland

Filed Jul. 14, 1983, Ser. No. 513,906
Claims priority, application Switzerland, Jul. 21, 1982, 4438/82
Int. Cl.³ B01F *15/06*
U.S. Cl. 366—144 **6 Claims**



1. A mixing and degassing apparatus for viscous substances, comprising:

a vessel having a discharge pipe;

a rotatable agitator within said vessel;

a temperature regulating system including heating/cooling coils located within said vessel;

a distributor device disposed above said coils within said vessel and joined for rotation with said agitator, said distributor device including a first portion which terminates adjacent to an inner wall of said vessel and a second portion which terminates over said coils; and

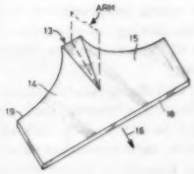
means for feeding a viscous substance to said distributor device.

4,469,445

WALL SCRAPING MIXING TOOL

William O. Wurtz, Paramus, N.J., assignor to Willowtech, Inc., Paramus, N.J.

Filed Oct. 21, 1982, Ser. No. 435,639
Int. Cl.³ B01F *7/04*
U.S. Cl. 366—300 **7 Claims**



1. A wall scraping mixing tool for mixing, drying or reacting dry materials, semi-dry materials, or viscous, pasty materials with or without fillers or fibers, within the walls of a mixing container having a main shaft, and at least one support arm coupled to said main shaft, comprising:

a generally flat, rectangular plate mounted perpendicular to the radial plane of the support arm having a forward straight edge disposed adjacent to the container wall and

a rearward straight edge located opposite and parallel to said forward straight edge disposed away from the container wall so that the rectangular plate is inclined with respect to the container wall; and

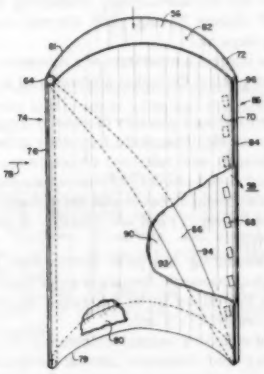
two side surfaces, disposed on said rectangular plate, inclined relative to each other and connected at one edge thereof forming a wedge-shaped double-sided body for connection to the end of the support arm, the forward edges forming a point located on the forward straight edge of said plate, said point rotating in the radial plane of the support arm.

4,469,446

FLUID HANDLING

George O. Goodboy, Glendale, Calif., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jun. 24, 1982, Ser. No. 391,664
Int. Cl.³ B01F *15/00*
U.S. Cl. 366—342 6 Claims



1. In fluid treatment apparatus of the type wherein a first fluid medium stream flowing in a first direction and at a first temperature is turned and is mixed with a second fluid medium stream at a second temperature, the improvement comprising:

a plurality of airfoil shaped turning vanes, having a leading edge and a trailing edge, disposed within said first stream, said vanes having an interior space, means for inletting said second stream into said interior space, a slot along said trailing edge for discharging said second inletted stream into said first fluid medium and a selectively movable insert to deflect the flow of said second stream through said slot.

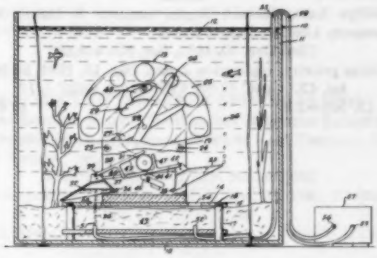
4,469,447

SUBMERGED ORNAMENTAL CLOCK OPERATED BY AIR BUBBLES

Victor H. Chatten, 1567 W. 215 St., Torrance, Calif. 90501

Filed Mar. 4, 1983, Ser. No. 472,079
Int. Cl.³ G04B *1/26*
U.S. Cl. 368—65 6 Claims

1. In an ornamental clock adapted to operate while submerged in a body of water, the clock having a clock face and relatively movable hands, and a mechanism for moving the hands, the improvement comprising, in combination: a ratchet wheel for driving the clock mechanism, an air bubble receiver mounted for movement between a first position to entrap air bubbles and a second position to release air bubbles into the body of water, a port for delivering air into the body of water and below said bubble receiver, ratchet means operated by said



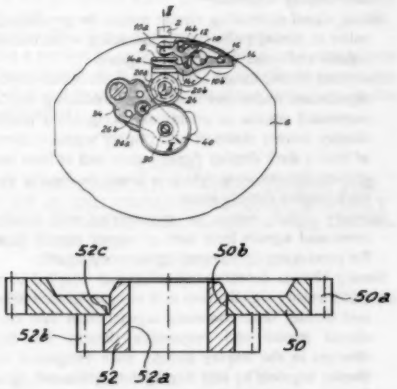
air bubble receiver for turning said ratchet wheel intermittently, and means for supplying air to said port.

4,469,448

SETTING MECHANISM FOR A WATCH

Jacques Muller, Reconvilier, Switzerland, assignor to E.T.A., S.A., Fabriques d'Ebauches, Switzerland

Filed Oct. 19, 1981, Ser. No. 312,670
Claims priority, application Switzerland, Oct. 23, 1980, 7891/80
Int. Cl.³ G04B *27/02*
U.S. Cl. 368—196 3 Claims

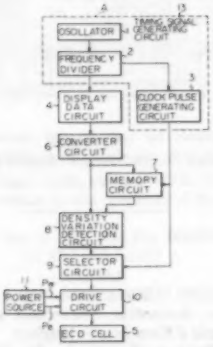


1. In a watch comprising a setting mechanism, a plate, drive means, analog time display means, and a gear train, the mechanism comprising stem slideable in the plate, a crown wheel which is mounted slideably on and rotatably with the stem, means for communicating to the crown wheel a sliding movement between a rest position and an engaged position in dependence on the sliding movement of the stem, and an intermediate wheel which engages with one of the members of the gear train and the sliding crown wheel when the latter is in the engaged position, the intermediate wheel comprising a wheel for engaging with the sliding crown wheel and a pinion engaging with one of the wheels of the gear train, the wheel of the intermediate wheel being disposed at a greater spacing from the axis of the stem than the pinion of the intermediate wheel.

4,469,449
DRIVE SYSTEM FOR ELECTROCHROMIC DISPLAY CELL

Toshikiyo Kato, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,680
Claims priority, application Japan, Dec. 11, 1981, 56-198485
Int. Cl.[3] G04C 17/00; C09F 9/00; G02F 1/17
U.S. Cl. 368—239 10 Claims



1. A drive system for an electrochromic display cell having a plurality of display segments, comprising:

display data circuit means for producing display data signals corresponding to data to be displayed by at least one of said display segments;

timing signal generating circuit means for producing a plurality of timing pulse signals including write timing pulse signals and erase timing pulse signals;

converter circuit means coupled to receive said display data signals and responsive thereto for producing display data command signals to selectively designate a plurality of display density states of said display segment comprising at least a dark display density state and at least one grey display density state which is lower in density than said dark display density state;

memory circuit means for memorizing said display data command signals from said converter circuit means and for producing corresponding memory signals;

density change detection circuit means coupled to receive said memory signals from said memory circuit means and said display data command signals from said converter circuit means and responsive thereto for detecting changes in the display density state designated for said display segment by said display data command signals and for producing control signals in accordance with the results of said detection of changes;

selector circuit means controlled by said control signals from said density change detection circuit means for selectively transferring specific pulses of said write timing pulse signals and said erase timing pulse signals to be output therefrom;

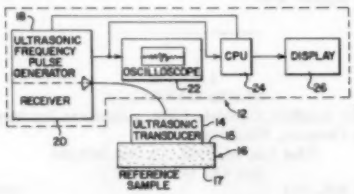
a power source;

drive circuit means controlled by said write timing pulse and erase timing pulse signals output from said selector circuit means for selectively supplying specific quantities of charge from said power source to said display segment and discharging said display segment by specific quantities of charge, to thereby selectively set said display segment into one of said plurality of display density states as designated by said display data command signals in accordance with said display data signals.

4,469,450
ELECTROACOUSTIC METHOD FOR NONDESTRUCTIVELY MONITORING THE INTERNAL TEMPERATURE OF OBJECTS

Costantino L. DiVincenzo, Parma, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jun. 1, 1982, Ser. No. 383,426
Int. Cl.[3] G01H 11/24; G01M 17/02
U.S. Cl. 374—119 12 Claims



1. A method for nondestructively monitoring the internal temperature of objects having poor thermal conductance, comprising the steps of:

determining the internal temperature of a reference object or a representative portion thereof at a plurality of internal temperatures (T);

noninvasively measuring a plurality of pulse propogation times (t_T) taken by an electroacoustic frequency pulse signal to propogate through said reference object or representative portion thereof at said plurality of internal temperatures (T);

establishing a relationship between said determined plurality of internal temperatures (T) and said plurality of pulse propogation times (t_T);

noninvasively measuring the pulse propogation time (t_{TU}) taken by an electroacoustic frequency pulse signal to propogate through the object to be monitored at an unknown internal temperature (T_U); and,

determining said unknown internal temperature (T_U), said step of determining said unknown internal temperature (T_U) including the step of correlating said measured pulse propogation time (t_{TU}) to said relationship between said determined plurality of internal temperatures (T) and said plurality of pulse propogation times (t_T).

4,469,451
METHOD AND APPARATUS FOR MEASURING TEMPERATURE OF AN EARTH FORMATION IN THE PRESENCE OF A RADIO FREQUENCY ELECTROMAGNETIC FIELD

Robert E. Kunetka, and Donald J. Dowling, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,815
Int. Cl.[3] G01K 13/00, 5/20
U.S. Cl. 374—136 8 Claims

1. Apparatus to aid in monitoring electromagnetic field strength during application of high intensity radio frequency energy to a subsurface formation by measuring the temperature at predetermined locations in a borehole in said formation, comprising in combination

a plurality of maximum registering thermometers,

a non-electrically conductive flexible line for supporting said thermometers in said borehole spaced at predetermined intervals, and

reel means for lowering and raising said thermometers in said boreholes,

each of said thermometers comprising a highly electrically conductive non-magnetic protective case having means for attaching said flexible line at either end thereof, and

a window in said case for reading said thermometer,

a glass capillary maximum registering type thermometer, and

a rotatable sleeve cover operatively associated with said case for closing said window when said thermometer is in said borehole.

4,469,452

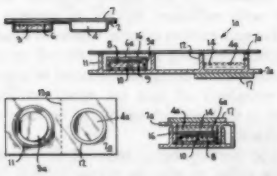
INDICATOR SYSTEM AND MEANS FOR IRREVERSIBLY RECORDING A TEMPERATURE LIMIT

Edward N. Sharpless, Somerville, and Joseph Lichtenstein, Colonia, both of N.J., assignors to Whitman Medical Corporation, Clark, N.J.

Filed Apr. 14, 1982, Ser. No. 368,379

Int. Cl.³ C09K *3/34;* **G01N** *21/06, 31/22;* **C01K** *3/00, 11/16*

U.S. Cl. 374—160 **19 Claims**



1. An indicator system for irreversibly recording the incidence of a predetermined temperature comprising a cholesteric liquid crystal system which exhibits a visible color in the cholesteric phase, an activator effectively intersoluble with the cholesteric liquid crystal system substantially at the predetermined temperature and barrier means for separating the liquid crystal system from the activator below said predetermined temperature so that the cholesteric liquid crystal system rapidly interacts with the activator when the activator permeates the barrier at or near the activation temperature thereof to cause an irreversible phase transition of the cholesteric liquid crystal system from the cholesteric phase to the isotropic phase and a coinciding irreversible change in the optical properties of the liquid crystal system from color-exhibiting to colorless substantially at the predetermined temperature.

4,469,453

ROTARY MULTI-MIRROR DRIVING MOTOR

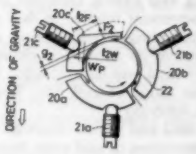
Hiroomi Kozawa; Shinichi Nishino, and Shigenobu Katagiri, all of Ibaraki, Japan, assignors to Hitachi Koki Company, Limited, Katsuta, Japan

Filed Apr. 22, 1983, Ser. No. 487,662

Claims priority, application Japan, Apr. 23, 1982, 57-69166

Int. Cl.³ F16C *32/06*

U.S. Cl. 384—117 **5 Claims**



1. A rotary driving motor, comprising:

a rotary shaft (**22**);

a rotor (**23**) mounted on said shaft;

a stator (**24**) surrounding said rotor;

dynamic pressure pneumatic bearing pad assemblies (**20, 21**) at both ends of said rotor, each assembly being formed by dividing a cylinder surrounding said shaft into several parts and providing a pad (**20***a*, **20***b*, **20***c*) for each said part; and

pivots (**21***a*, **21***b*, **21***c*) supporting said pads;

wherein a portion of an upper pad (**21***c*) whose weight acts to depress said shaft is reduced in weight, to decrease a gravitational moment of said upper pad about it pivot due to said weight.

4,469,454

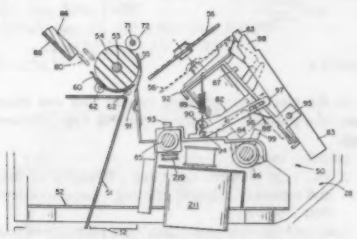
PRINT WHEEL MOUNTING ARRANGEMENT FOR PRINT HEAD AND RIBBON CARTRIDGE ASSEMBLY

Gerald J. Crean, Topsfield, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Nov. 4, 1980, Ser. No. 203,945

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **5 Claims**



1. In printing apparatus including

a frame having end portions and a paper support surface extending transversely therebetween,

a rotary disk print wheel, print head and ribbon cartridge assembly having a ribbon movable along a printing line parallel to said paper support surface and spaced therefrom in an operating position with said ribbon interposed

between said rotary disk print wheel and said paper support surface for printing, and

support means supporting and guiding said print head and ribbon cartridge assembly for movement along said printing line,

the improvement wherein

said print head and ribbon cartridge assembly comprises

assembly base means mounted on said support means for movement along said printing line,

print head mounting means having a print head pivot axis parallel to said printing line pivotally mounting said print head on said base means for tilting of said print head into an inoperative position away from said paper support surface,

ribbon cartridge mounting means having a ribbon cartridge pivot axis parralel to and spaced from said print head mounting means, said ribbon cartridge pivot axis pivotally mounting said ribbon cartridge on said print head for tilting movement relative to said print head into an extended inoperative tilted position, and

actuating means for tilting said ribbon cartridge relative to said print head into said extended inoperative tilted position upon tilting of said print head into its inoperative position, whereby

said print head and ribbon cartridge assembly provides for tilting movement of said print head and ribbon cartridge into said inoperative position tilted away from said paper support surface with said ribbon cartridge in said extended inoperative tilted position spaced away from said print head for removal of said rotary disk print wheel free from interference from said paper support surface or said ribbon cartridge without removing said ribbon cartridge.

4,469,455

ELECTRONIC EQUIPMENT

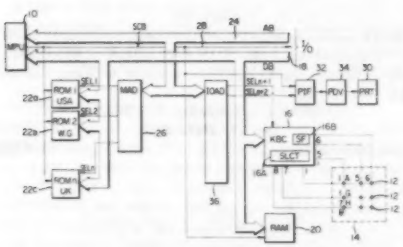
Masaru Makita, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1982, Ser. No. 404,525

Claims priority, application Japan, Sep. 4, 1981, 56-138369; Sep. 4, 1981, 56-138372; Oct. 13, 1981, 56-162012

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—171 **6 Claims**



1. An electronic printing system that can incorporate any one of a plurality of interchangeable type elements, comprising:

printing means;

a first type element carrying a plurality of first characters and mountable in said printing means in order to print said first characters;

a second type element carrying a plurality of second characters and mountable interchangeably with said first type element in said printing means in order to print said second characters, one portion of each of said plurality of first characters and said plurality of second characters being common and a different portion of each of said plurality of first characters and said plurality of second characters not being common;

a first read-only memory containing information relating to said one portion of each of said plurality of first characters and said plurality of second characters which are common and information relating to said different portion of said plurality of first characters;

a second read-only memory containing information relating to said different portion of said plurality of second characters not in common with said different portion of said plurality of first characters; and

means for selecting said first read-only memory when said first type element is mounted in said printing means and for selecting both said first read-only memory and said second read-only memory when said second type element is mounted in said printing means.

4,469,456

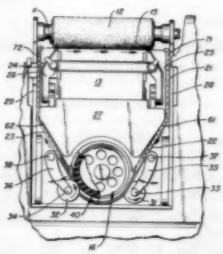
DISPOSABLE RIBBON CARRIER FOR A STENOGRAPH REPORTING MACHINE

H. Diane Fitzgerald, 395 Nob Hill Dr., Walnut Creek, Calif. 94596

Filed Sep. 25, 1981, Ser. No. 305,587

Int. Cl.³ B41F *1/04*

U.S. Cl. 400—194 **16 Claims**



1. A disposable ribbon carrier for use with a stenograph reporting machine having a printing station, a supporting station for a rotatable ink spool having a ribbon engaging surface, at least one retractable pressure roller adjacent said supporting station for urging an inkable ribbon against the surface of said ink spool, and a pair of laterally spaced narrow feed channels normally providing a ribbon transport path for said inkable ribbon between said printing station and said supporting station, said ribbon carrier comprising:

a pair of essentially rigid ribbon guide members between said printing station and said supporting station; and

a central portion joining the ends of each said pair of ribbon guide members in the region adjacent said supporting station with sufficient rigidity to provide a tensioning force for said endless inkable ribbon in combination with said ribbon engaging surface of the ink spool;

said central portion being dimensioned to accommodate the outer periphery of said ink spool within the interior thereof so that said ink spool can be received interior to said central portion;

said central portion being relieved in the region of said pressure roller to provide access to said ribbon by said roller,

said ribbon guide members each having a first portion diverging outwardly in the direction away from said supporting station toward said printing station and a second portion extending from the termination of the first portion to a terminating location adjacent said printing station when said carrier is installed in said reporting machine, the second portions being substantially mutually parallel;

said second portions being dimensioned to be removably received in said narrow feed channels when said carrier is installed in said machine.

4,469,457

CASSETTE TYPE INK RIBBON DEVICE

Yoshinori Chida, and Satoru Tada, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

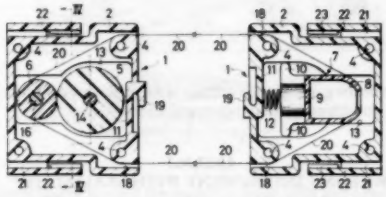
Continuation of Ser. No. 190,066, Sep. 23, 1980, Pat. No. 4,352,577. This application Aug. 31, 1982, Ser. No. 413,567

Claims priority, application Japan, Nov. 5, 1979, 54-143010; Nov. 5, 1979, 54-143012; Apr. 4, 1980, 55-45487

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.³ B41J *32/02*

U.S. Cl. 400—208 **7 Claims**



1. In a cassette type ink ribbon device of the type comprising a pair of cassette cases mountable in spaced-apart non-touching relation on a printing apparatus during use of the device: an endless ink ribbon extending through the pair of cassette cases and having inner and outer opposite sides; a transfer roller and an ink roller both rotatably mounted within one of said pair of cassette cases and being in contact with one another to replenish ink onto said ink ribbon; and a slidable tensioner for applying a tensioning force to said ink ribbon and disposed within the other of said pair of cassette cases, the tensioner comprising a slidable guide body having a guiding surface portion in sliding contact with the inner side of the ink ribbon, means defining a slideway within the said other cassette case for slidably supporting the guide body, and biasing means disposed within said other cassette case for biasing the guide body along the slideway to apply a tensioning force to the ink ribbon whereby minor variations in the spacing distance between the pair of cassette cases when mounting thereof on a printing apparatus can be accomodated by sliding movement of the guide body.

4,469,458

POSITION CONTROL MECHANISM FOR A TYPEWRITER RIBBON CARTRIDGE

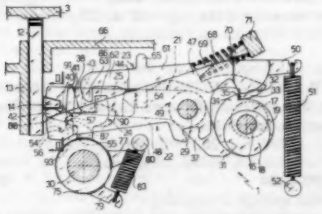
Nicolò Giolitti, Ivrea, Italy, assignor to Remington Ind. E Com. De Sistemas Para Escritorio S.A., Rio de Janeiro, Brazil

Filed Apr. 8, 1982, Ser. No. 366,567

Claims priority, application Italy, Apr. 28, 1981, 67573 A/81

Int. Cl.³ B41J *35/22*

U.S. Cl. 400—214 **14 Claims**



1. A typewriter having a typewriting member, having a ribbon cartridge of the type comprising a frame which carries a first and a second ribbon on different planes, and having a mechanism for controlling the positioning of said cartridge with respect to said typewriting member, wherein said mechanism comprises:

(a) a drive shaft capable of rotation about an axis;

(b) a support member which contacts the frame of said cartridge for providing support;

(c) conversion means which convert the rotations of said drive shaft about said axis of rotation into displacements of said support member along a longitudinal axis in such a way as to make said cartridge assume a first, a second, or a third stable position, said first ribbon being located in front of said typewriting member when said cartridge is in said first position, said second ribbon being located in front of said typewriting member when said cartridge is in said second position, and neither said first ribbon nor said second ribbon being located in front of said typewriting member when said cartridge is in said third position, said conversion means comprising:

(i) a first, a second, and a third cam, each of said cams being mounted on said drive shaft for rotation therewith;

(ii) a first and a second rocker lever, each of said rocker levers having a first arm which cooperates with said first and said second cam, respectively, and having a second arm which is operable to control the displacement of said support member along said longitudinal axis;

(iii) a stop pin rigidly fixed relative to said axis of rotation of said drive shaft;

(iv) a firs and a second resilient biasing means connected to said stop pin;

(v) a first and a second latching mechanism, said first latching mechanism cooperating with said first rocker lever against the action of said first biasing means and said second latching mechanism cooperating with said second rocker lever against the action of said second biasing means in such a way that each of said first and said second rocker levers can assume a first or a second working position, said first and said second working positions of said first and said second rocker levers being combined in such a way that said support element assumes a first, a second, or a third stable position corresponding to said first, said second, and said third stable positions of said cartridge; and

(vi) a third rocker lever having a first arm which cooperates with said third cam and a second arm operable to control said first and said second latching mechanisms against the action of said first and said second biasing means, respectively.

4,469,459

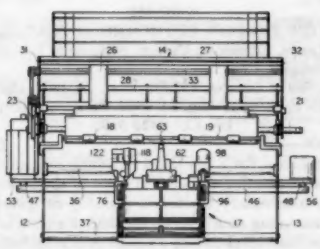
COLOR PRINTER

Richard Trezise, San Jose; John Boldt, San Ramon, and Keith Gnutzman, Alameda, all of Calif., assignors to Envision Technology, Inc., San Jose, Calif.

Filed Apr. 21, 1982, Ser. No. 370,200

Int. Cl.³ B41J *35/14, 33/04*

U.S. Cl. 400—216.1 **6 Claims**



1. A printer including a platen, a carriage for moving a

printing head along a line of printing to print from a print ribbon disposed between the print head and platen, said carriage including:

cartridge housing means for replaceably supporting a plurality of print ribbon cartridges one above the other;

means carried by said carriage for providing vertical movement of said cartridge housing means to bring the ribbon of a selected cartridge between the print head and the platen at any printing location in said line of printing, said means for providing vertical movement of said cartridge housing means including a pair of vertical slots in a pair of sidewalls fixed to said carriage said housing means having corresponding pins which ride in such slots; and

ribbon drive means for moving ribbon past the print head as printing progresses.

4,469,460

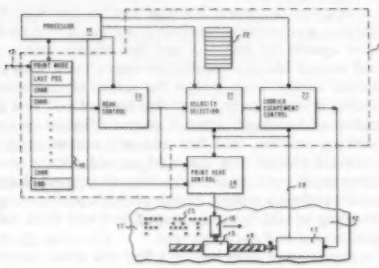
MATRIX PRINTER WITH OPTIMUM PRINTING VELOCITY

John J. Hughes, Round Rock, and Darryl R. Polk, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,646

Int. Cl.³ B41J *19/30*

U.S. Cl. 400—322 **8 Claims**



1. A printer comprising

a printhead movable across a record medium,

means for determining the length of a line of alphanumeric characters to be printed by said printhead on said medium,

drive means responsive to said determined length for moving said printhead across said medium at a selected uniform velocity said velocity being different for different line lengths, and

means for activating said printhead during the movement of said printhead to print said line of characters.

4,469,461

LOW PROFILE KEYBOARD ACTUATOR

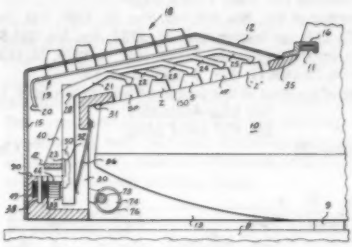
Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Continuation of Ser. No. 855,818, Nov. 30, 1977, abandoned. This application Aug. 24, 1982, Ser. No. 410,912

Int. Cl.³ B41J *5/08*

U.S. Cl. 400—473 **20 Claims**

1. An actuator for a keyboard including in combination a shaft, means mounting the shaft in front of the keyboard and extending transversely thereof, a plurality of levers, means pivotally mounting each lever on the shaft at a point intermediate its ends, each lever having a generally horizontally extending first arm which overlies the keyboard and a second arm, means effectively biasing each lever in a direction tending to pivot its first arm downwardly with a force sufficient to actuate a key of the keyboard, and controllable means including



means bearing against the second arms of the levers for selectively governing pivotal movement thereof.

4,469,462

WRITING INSTRUMENT WITH SEALING TIP

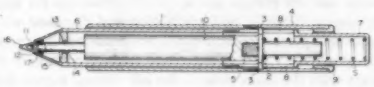
Yasuyuki Hashimoto, Hyogo, and Kazuo Shimizu, Osaka, both of Japan, assignors to Ancos Co., Ltd., Osaka, Japan

Filed Jul. 2, 1982, Ser. No. 394,957

Claims priority, application Japan, Nov. 11, 1981, 56-167109[U]; Apr. 13, 1982, 57-52578[U]; Apr. 17, 1982, 57-55014[U]

Int. Cl.³ B43K *9/00, 7/12, 8/00*

U.S. Cl. 401—107 **33 Claims**



1. A writing instrument, comprising; a barrel composed of a front barrel member and a rear barrel member which are made rotatable relative to one another, a writing member fitted in said barrel members and equipped with a writing tip at the front thereof, a transmission mechanism interposed between said barrel members and said writing member for moving said writing member back and forth when said front barrel member and said rear barrel member are rotated relative to one another, said front barrel member being formed at its leading end with a through hole through which the writing tip of said writing member can move into and out of said barrel, and a gravity actuated seal member inside the leading end of said front barrel member, said seal member being operative to plug said through hole when said writing member is in a retracted position with the leading end of said writing instrument being directed downwardly and to disengage said through hole when said writing instrument is held in an approximately horizontal position, said seal member being maintained in its plugging position by a force transmitted through said writing member.

4,469,463

SCRUB SPONGE WITH PROJECTION AND WELL

Ronald R. Van Overloop, Palatine, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 25, 1983, Ser. No. 488,571

Int. Cl.³ B43K *5/14;* **A45D** *40/26*

U.S. Cl. 401—134 **17 Claims**

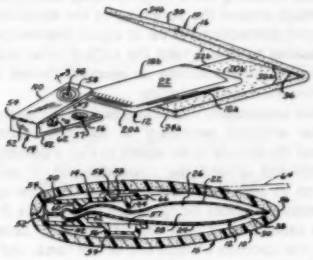
1. A scrub sponge, comprising:

a packet having a rupturable wall and a closed chamber containing a liquid scrub agent;

a cover of foam material having a cavity to receive said packet and enclosing said packet; and

a puncture member intermediate said cover and the packet and having a pair of generally aligned and spaced arms on

opposed sides of the packet beneath the cover, hinge means connecting said arms adjacent one end of the packet, a sharp projection on one of the arms directed toward the packet to pierce the wall when the arms are pressed toward each other to release the scrub agent into the cover, well means on the other of the arms defining a



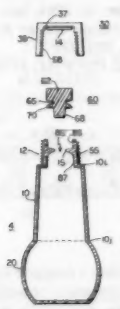
recess facing toward the packet aligned with and adapted to receive said projection thereby preventing said projection from protruding through said other arm and scratching the patient, and alignment means on each of said arms to guide said projection into said recess when the arms are pressed toward each other.

4,469,464

INK PAD APPLICATOR

John P. Capezzuto, Cambridge, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Feb. 22, 1982, Ser. No. 350,772
Int. Cl.³ B05C *17/00*; B43K *8/02*
U.S. Cl. 401—183 **7 Claims**



1. A device for dispensing liquid ink for use in coating an ink stamp pad in order to fill the pad, comprising

a container for the liquid ink including a flexible body portion and an open end,

liquid ink in said container, said liquid ink having a viscosity between about 20 to 200 centipoise,

a porous plastic applicator disc, substantially cylindrical, secured to said container adjacent the open end in a liquid impervious seal, said porous plastic applicator disc formed of sintered polyolefin thermoplastic material having a thickness of between about 0.5 and 1.5 centimeters and having an exposed portion being a substantially flat surface for contact with an ink pad, said porous, plastic applicator having an average pore size of less than about 50 microns, and the pores occupying less than about 50 percent of the applicator by volume, said applicator secured to the open end of said container by engagement between an annular flange at an inner surface of the open end of said container and a circumferential groove in said applicator, and wherein said applicator includes a flexible portion adjacent said circumferential groove to permit the insertion of said applicator into engagement between the annular flange and circumferential groove,

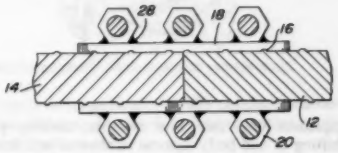
wherein a squeezing of the flexible body portion of said container induces an expulsion of liquid ink through said porous plastic applicator and the release of said container allows the return of the flexible body portion substantially to its original shape and induces a partial vacuum therein which facilitates return of ink from the applicator to the container.

4,469,465

REBAR COUPLER

James S. Andrus, 947 N. Korff Dr., Vineland, N.J. 08360

Filed Sep. 10, 1981, Ser. No. 300,814
Int. Cl.³ F16B *7/18*
U.S. Cl. 403—282 **11 Claims**



1. A coupler for connecting the ends of two axially aligned and abutting reinforcing rods having pattern deformations on the outer surfaces thereof, said coupler comprising

two separable elongated members, the members each including at least an arcuate portion which portions cooperate to form a hollow cylinder when the two members are joined together, said members being adapted to be mounted around the abutting ends of the rods, said arcuate portions initially having generally smooth inner surfaces adaptable to fit about the periphery of said rods, said inner surfaces being deformable such that the application of sufficient clamping force on said members results in said pattern deformations of said rods being embedded within said inner surfaces of said arcuate portions of said members, and

clamping means on said members to apply and maintain said clamping force and to hold said members in place around said rods.

4,469,466

FASTENING DEVICE

Roger W. Hotz, 33 Totoket Rd., Branford, Conn. 06405

Filed Nov. 7, 1977, Ser. No. 849,169
Int. Cl.³ F16B *7/18*
U.S. Cl. 403—388 **25 Claims**

1. Fastening means for rigidly locking a first member to a second member wherein said members are provided with surfaces of engagement permitting adjustment relative to each other in a plane defined by said surfaces, said members being subjected to forces tending to shift them relative to each other in one direction within said plane, said fastening means comprising

a frustoconically shaped body element having substantially oppositely disposed faces, one of said faces being a conical contact surface for engagement with a corresponding contact surface on said first member,

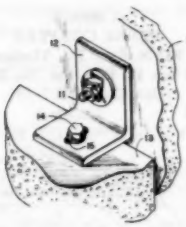
a wedging element disposed for wedging engagement with said body element,

said body element and wedging element having corresponding wedging surfaces arranged to limit movement of said

first and second members relative to each other in said one direction,

said first member having an opening smaller in at least one dimension than the corresponding dimension of said body element so that said body element can not be driven through said opening by forces acting normal to said plane, an edge-portion surrounding said opening forming said corresponding contact surface, and

locking means fixedly supported by said second member and arranged to force said wedging element into engagement with said body element and said body element into engagement with said first member, thereby preventing shifting of said body element relative to said first member in order to positively lock said members together at such adjusted position,



a portion of said conical surface on the body element extending into said opening in said first member, said body element having a slot extending generally in said one direction, said conical surface being driven by said locking means into engagement with said edge-portion of said opening in said first member,

the axis of said frustoconically shaped body element extending substantially normal to said plane.

4,469,467

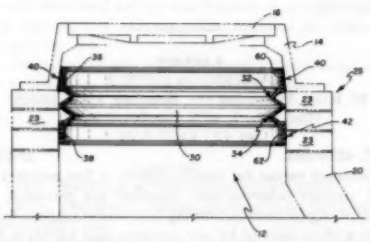
MANHOLE CHIMNEY SEAL

Frank J. Odill, West Allis, Wis., and David E. Anderson, Elk River, Minn., assignors to The Cretex Companies, Inc., Elk River, Minn.

Filed Jan. 18, 1982, Ser. No. 340,323

Int. Cl.³ E02D 29/12

U.S. Cl. 404—25 **15 Claims**



1. A manhole seal for manhole assemblies of varying diameters having a manhole casting mounted on the manhole, the improvement comprising:

sealing means for sealing the interface between the manhole casting and the manhole against infiltration of surface water without preventing ingress or egress to the manhole, the sealing means comprising:

a generally cylindrical axially expandable rubber seal having sealing sections on each end thereof, the sealing section on one end thereof being adapted to be sealed to the inside surface of the manhole and the sealing section on the other end thereof being adapted to be sealed to the inside surface of the manhole casting;

a retaining band associated with each of the sealing sections, both retaining bands having two end which overlap one another and when connected together form a continuous circular retaining band, each retaining band being adapted to extend around the periphery of the manhole assembly without obstructing ingress or egress thereto and to force the sealing section against the surface to be sealed;

each sealing section having an aperture therein to receive the circular retaining bands;

means for tangentially expanding each of the retaining bands to the diameter necessary to seal the sealing section against the surface to be sealed so that a continuous force is provided around the circumference of each sealing section to seal each of the sealing sections against the respective surfaces being sealed said means for tangentially expanding at least one of the bands comprising at least one aperture at each end of the band; and

means for locking each of the expanded retaining bands so that the sealing means seals the interface between the manhole casting and the manhole against infiltration of surface water said means for locking at least one of the bands comprising at least one fastening means which extends through the aperture at each end of the band to lock the band after it has been expanded.

4,469,468

APPARATUS FOR JUMPING A MOVING OBJECT FROM ONE PLACE TO ANOTHER AND A METHOD OF USING IT

Ole F. Larsen, Fasanvaenget 62, DK-6700 Esbjerg, Denmark

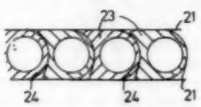
PCT No. PCT/DK81/00007, § 371 Date Sep. 16, 1981, § 102(e) Date Sep. 16, 1981, PCT Pub. No. WO81/02054, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 16, 1981, Ser. No. 302,416

Claims priority, application United Kingdom, Jan. 18, 1980, 8001715; Oct. 13, 1980, 8032934

Int. Cl.³ F16L 57/00

U.S. Cl. 405—157 **7 Claims**



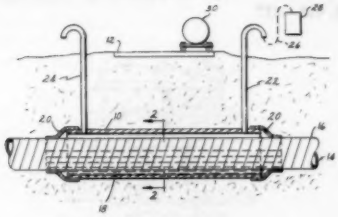
1. Apparatus for jumping a dragged object from one place to another comprising an elongated upwardly convex plate member defined by opposite end edges and opposite generally parallel terminal longitudinal edges, said apparatus being supported relative to a supporting surface only upon said longitudinal edges with said longitudinal edges being normally spaced a predetermined distance from each other, said plate member being defined by at least three longitudinal plates disposed in side-by-side relationship to each other and imparting said upwardly convex configuration to said plate member, pivot means between adjacent ones of said at least three plate members for effecting relative pivoting movement therebetween along axes generally parallel to said longitudinal edges, means for establishing a predetermined initial minimum convexity of said plate member upon said longitudinal edges being disposed relative to a supporting surface, and means responsive to relative movement of said longitudinal edges toward each other causing a reduction in said predetermined distance and an increase of said initial minimum convexity for limiting such movement and establishing a predetermined maximum convexity of said plate member greater than said initial minimum convexity.

4,469,469

PROTECTIVE SYSTEM FOR UNDERGROUND PIPES

Ted Kennedy, Jr., Ann Arbor, Mich., assignor to The Trenton Corporation, Ann Arbor, Mich.

Filed Sep. 13, 1982, Ser. No. 417,400
Int. Cl.³ F16L 1/02, 58/12
U.S. Cl. 405—157 11 Claims



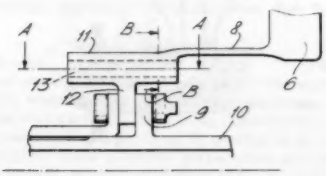
1. In a method of protecting underground pipe from corrosion in a region in which the pipe extends through a casing in which water has collected and may be subject to the deleterious action of the collected water, including any destructive agents contained therein, comprising the steps of sealing the ends of the casing to provide a closed chamber around the pipe, and pumping a corrosion-resistant compound into said chamber to subtantially fill said chamber with said compound and simultaneously displace all or much of the water from said chamber, the improvement comprising introducing to said chamber, prior to pumping the corrosion-resistant compound thereinto, a treatment substance capable of mixing with the water and reducing or neutralizing its deleterious effect so that any water remaining in said chamber after the corrosion-resistant compound has been pumped into said chamber will be relatively harmless to the pipe.

4,469,470

DEVICE FOR PASSING A FLUID FLOW THROUGH A BARRIER

Alan P. Geary, Bristol, England, assignor to Rolls Royce Limited, London, England

Filed Apr. 18, 1983, Ser. No. 486,078
Claims priority, application United Kingdom, Apr. 21, 1982, 8211492
Int. Cl.³ F01D 5/08, 5/18
U.S. Cl. 415—115 2 Claims



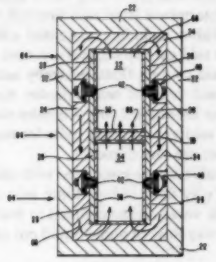
1. A device for allowing passage of a fluid flow through a barrier where there is relative rotation between the barrier and the fluid flow, comprises a receiver connected to the barrier and having an annular cross-section about a longitudinal axis and which has a plurality of circumferentially spaced slots passing therethrough each having a fluid entry at one axial end face and a fluid exit at the opposite axial end face, characterised in that each slot has a longitudinal axis which is helical and at the fluid entry is inclined to the longitudinal axis of the receiver at an angle which is substantially equal to the angle of the relative approach velocity vector of the fluid approaching the receiver.

4,469,471

ELECTROMAGNETIC FLOW COUPLER

Alvin R. Keeton, Finleyville, and Philip A. Ciarelli, Jr., Clarksburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1982, Ser. No. 391,030
Int. Cl.³ H02K 44/00
U.S. Cl. 417—50 8 Claims



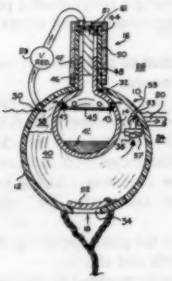
1. An electromagnetic flow coupler comprising:
an outer duct;
a substantially rectangular electrically conductive inner duct disposed within said outer duct for conducting an electric current therethrough;
a first insulator and a second insulator disposed along opposite inside walls of said inner duct for minimizing the flow of electricity through said insulators;
an electrically conductive divider member disposed in said inner duct and between said first insulator and said second insulator thereby dividing said inner duct into a first channel and a second channel for conducting two separate electrically conductive fluids therethrough; and
a plurality of electrically conductive corrosion resistant plates disposed in said first and second channels for lining said channels.

4,469,472

PUMP MECHANISM POWERED BY GASEOUS EXPANSION

John C. Newby, 41289 Malcolmson St., Fremont, Calif. 94538

Filed Jul. 19, 1982, Ser. No. 399,839
Int. Cl.³ F04B 21/00
U.S. Cl. 417—61 9 Claims



1. A pump mechanism adapted to float at the interface between a reservoir of a liquid and a reservoir of a gas, said pump mechanism comprising:
(a) a floating enclosure provided with an internal chamber, said enclosure further having an upper surface exposed to said gas reservoir, a lower surface exposed to said liquid reservoir, a gas orifice permitting communication be-

tween said gas reservoir and said chamber, a liquid orifice permitting communication between said liquid reservoir and said chamber, and an output orifice, whereby a lower volume of said chamber is filled with pump liquid and an upper volume of said chamber is filled with pump gas;

(b) a cycling float located within said chamber and floating on said pump liquid;

(c) first valve means coupled to said cycling float and adapted to close said gas orifice when said pump liquid is above a predetermined level, said first valve means including a slide valve including a vented cylinder member coupled over said gas orifice, and a vented piston member coupled to said cycling float, whereby said slide valve is open when said vents of said cylinder member and said piston member are aligned, and whereby said slide valve is closed when said vents of said cylinder member and said piston member are not aligned;

(d) first check valve means associated with said liquid orifice to allow one way flow of liquid into said chamber; and

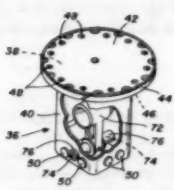
(e) second check valve means coupled to said output orifice to allow one way flow of pump liquid out of said chamber.

4,469,473

RECIPROCATING PISTON APPARATUS

Forest G. Brown, Valley Center, Kans., assignor to Sigma Tek Inc., Wichita, Kans.

Filed Mar. 5, 1982, Ser. No. 354,150
Int. Cl.³ F04B *39/10*
U.S. Cl. 417—571 **28 Claims**



1. Apparatus including a reciprocating piston, comprising:

a cylinder including cylinder head means having intake and exhaust valves;

a crank case attached to said cylinder and including crank shaft mounting means;

a slider having a piston mounting at one end and a skirt extending from the mounting, said skirt for guiding said slider within said cylinder and including an access port and a bushing, the access port positioned in the skirt between the piston mounting and the bushing, said slider mounted in said crank case for reciprocating motion therein;

a piston attached to the piston mounting in said cylinder and reciprocating with said slider;

a crank shaft rotatably mounted to the crank shaft mounting means of said crank case, said crank shaft extending into the skirt of said slider through the access port thereof; and

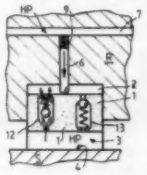
a connecting rod contained in said skirt and having one end rotatably mounted to the crank shaft and a second end connected to said bushing, said connecting rod and said skirt forming a folded connecting means for coupling said crank shaft to said piston, thereby reducing the overall axial dimension of said apparatus.

4,469,474

AXIALLY SLIDABLE VANE MOTOR WITH VALVES IN FLUID-BASED VANES

Daniel Leroy, Limay, and Laurent Gazagne, Paris, both of France, assignors to Compagnie de Construction Mechanique Sulzer, Paris, France

Filed Jul. 9, 1981, Ser. No. 281,735
Int. Cl.³ F04C *2/00*
U.S. Cl. 418—217 **7 Claims**



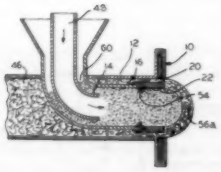
1. A hydrostatic motor of the axially slidable vane variety comprising a stator and a rotor, said rotor being formed with a plurality of vane housings, a vane mounted in each of said rotor housings for sliding motion therein axially of said motor, an auxiliary fluid circuit formed in said rotor interconnecting all of said vane housings together on the back sides thereof between the back of each said vane and the respective bottom of each said housing, a main fluid circuit between said stator and the front ends of all of said vanes, valve means interconnecting said auxiliary and main fluid circuits to permit a flow of fluid in one direction only from said main circuit to said auxiliary circuit, each said vane being provided with valve means therein to permit controlled flow in both directions between said main circuit at the front of said vanes and the space within each vane housing behind each said vane therein, and said vane valve means being operable upon each stroke of each said vane within its rotor housing.

4,469,475

MACHINERY FOR MAKING ENCRUSTED FOOD PRODUCTS

Dobroslaw J. Krysiak, 5058 N. Ridgeway, Chicago, Ill. 60625

Filed Jul. 1, 1983, Ser. No. 510,429
Int. Cl.³ B29D *3/00*; B21C *3/04*
U.S. Cl. 425—132 **30 Claims**



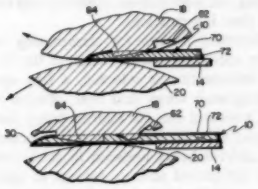
1. An extrusion head for forming a filling within an outer shell, said head comprising at least an outer tube and an inner tube wholly contained within said outer tube, extrusion valve means for controlling the delivery of an extruded product from said outer tube, flexible sleeve means completely surrounding said inner tube for enabling a flow out said inner tube when said extrusion valve means is open and for folding over and closing said inner tube responsive to back pressure in said outer tube when said extrusion valve is closed and finger means hinged to the end of said inner tube for opening and closing with said flexible sleeve and for supporting said sleeve in both said open and closed positions, whereby said flow in said inner tube may be outwardly, but not inwardly.

4,469,476

APPARATUS FOR MANUFACTURING WAFERS

John F. Cavanagh, North Providence, and Paul A. Cavanagh, Johnston, both of R.I., assignors to Cavanagh & Sons, Inc., Smithfield, R.I.

Filed Apr. 6, 1979, Ser. No. 27,598
Int. Cl.³ A21C *11/00, 11/06*
U.S. Cl. 425—216 7 Claims



1. Apparatus for manufacturing wafers from a sheet of bread having opposing friable outer crusts enclosing a center which is softer than said crusts comprising, wafer forming means including a rotatable forming roll having a surface with at least one wafer former formed in said surface, said wafer former comprising a cavity formed below the surface of said forming roll, said cavity having a bottom portion with a side wall extending from said bottom portion and terminating at a cutting surface, said sidewall being configured as a pair of truncated cones one sitting on top of the other, said side wall being tapered at an angle of between 45 and 70 degrees to said cutting surface, a rotatable pressure roll positioned in rolling engagement with the surface of said forming roll, means for guiding the sheet of bread between said forming roll and said pressure roll so said forming roll and said pressure roll are rotated, said pressure roll acting to press the sheet of bread into said cavity and onto said cutting surface to thereby form and cut a wafer from said sheet, said wall of said former acting to engage and support the edge of said wafer which is produced as said wafer is cut to thereby substantially preclude crumbling of said wafer edge during cutting on said cutting surface.

4,469,477

DENTAL PROSTHESIS

William D. Potter, Bishops Stortford, England, assignor to Smith & Nephew Associated Companies p.l.c., England

Filed Mar. 24, 1983, Ser. No. 478,241
Claims priority, application United Kingdom, Apr. 2, 1982, 8209777
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—168 7 Claims

1. A dental prosthesis having at least part of the surface of the prosthesis which contacts the mucous membrane of the mouth coated with a soft polymeric lining characterized in that the soft polymeric lining is produced by coating the prosthesis with a hydrophilic linear polyether polyurethane and hydrating the coating with water to a thickness of 0.1 to 3.0 mm and a water content of 20 to 30%.

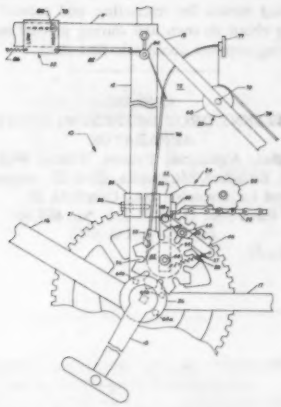
4,469,478

SHIFT MECHANISM FOR BICYCLES

Thomas J. Weiss, 12824 Opalocka Dr., Chesterland, Ohio 44026

Filed Oct. 19, 1981, Ser. No. 312,720
Int. Cl.³ F16H *11/00;* B60K *20/02*
U.S. Cl. 474—80 13 Claims

1. In a bicycle comprising a frame; a crank mechanism rotatable within said frame; a drive sprocket attached to said crank mechanism for rotation therewith; a drive chain entrained around said drive sprocket, at least a portion of said drive chain being under tension when a driving force is applied to said crank mechanism and slack when no driving force is applied thereto; first cable means for effecting speed changes of said bicycle; and apparatus for moving said first cable means to a plurality of positions, said apparatus comprising drive means mounted on said crank mechanism for rotation therewith, driven means mounted on said frame for movement between a first position in engagement with said drive means for rotation



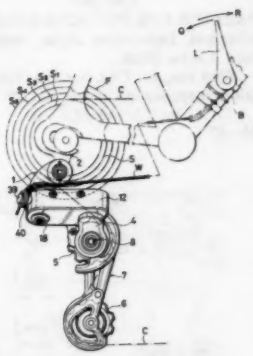
therewith and a second position out of engagement with said drive means, spring means biasing said driven means into said first position, means connecting said driven means to said first cable means for linear movement of said first cable means with rotation of said driven means, and means connected to said driven means and engageable with said portion of said drive chain to move said driven means to said second position when said portion of said drive chain is in tension.

4,469,479

BICYCLE DERAILLEUR

Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Sep. 28, 1982, Ser. No. 425,297
Int. Cl.³ F16H *11/08*
U.S. Cl. 474—80 12 Claims



1. A bicycle derailleur comprising
a stationary member to be fixed to a bicycle frame,
a first shaft integral with and extending from said stationary member,

a spring-biased swing member pivotally supported at one end by said first shaft,

a second shaft supported by said swing member at a position spaced apart from said first shaft and extending in parallel relation with respect to said first shaft and in relatively rotatable relation with respect to said swing member,

a movable member fixedly mounted to said second shaft,

a chain guide means carried by said movable member, and

a restricting means for restricting said second shaft from rotating about its own axis during pivotal movement of said swing member about said first shaft.

4,469,480

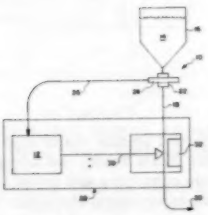
INTERMITTENT DROP DETECTING METHOD AND APPARATUS

Alan A. Figler, Algonquin; Pamela Wilson, Waukegan, and Randall A. Zielsdorf, Mundelein, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 11, 1983, Ser. No. 465,707

Int. Cl.³ A61M *5/16*

U.S. Cl. 604—52 **12 Claims**



1. A method of monitoring drop flow rate from a fluid source, comprising:

detecting the time period between drops of fluid;

comparing a current time period with at least one limit defined by a previous time period;

adding an error factor to an accumulated error total if said current time period is not within said limit;

comparing said accumulated error total to a predetermined accumulated error threshold limit; and

setting an alarm if said accumulated error total is greater than said predetermined threshold limit.

4,469,481

APPARATUS FOR INFUSING MEDICATION

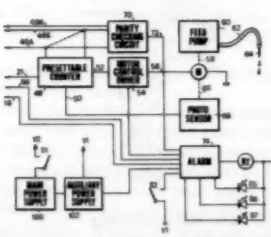
Susumu Kobayashi, Fujinomiya, Japan, assignor to Terumo Corporation, Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 388,918

Claims priority, application Japan, Jun. 23, 1981, 56-96043

Int. Cl.³ A61M *37/00*

U.S. Cl. 604—67 **14 Claims**



1. An apparatus for infusing liquid medication, comprising:

time base means for generating time information;

memory means for storing first infusion information indicative of a liquid medication infusion dose which varies with time information generated by said time base means, and second infusion information corresponding to a meal pattern determined by the time information generated by said time base means;

first addressing means for effecting an address designation in accordance with said time information upon establishing correspondence between a portion of address information for reading out information stored in said memory means, and said time information;

second addressing means for designating respective addresses in accordance with which of the first and second infusion information is selected, a first specific address being designated when said first infusion information is selected, a second specific address being designated when said second infusion information is selected, said second specific address being updated in accordance with time until the designated address returns to said first specific address of said first infusion information; and

infusion means driven in accordance with infusion information read out of said memory means for infusing said liquid medication into a living body.

4,469,482

DISPOSABLE HYPODERMIC SYRINGE

Rokus C. D. Lissenburg, Eindhoven, and Paulus R. Kamstra, Oist, both of Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Jul. 26, 1982, Ser. No. 402,077

Claims priority, application Netherlands, Jul. 29, 1981, 8103568

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—187 **10 Claims**

1. A syringe comprising a barrel which is open at each end and which for the greater part has an inside diameter which remains the same in the longitudinal direction and is rotationally symmetrical; a piston which can be moved in the barrel and seals same, to which piston a piston rod is or can be connected; a needle or means to connect same to the front of the barrel; a stopper, the dimensions of which are such that it can be provided in a sealing manner and be movable between the piston and the needle or needle connection means; and a finger grip or means to connect same to the outside of the barrel, said syringe being characterized in that the inner wall of the barrel is locally deformed from the front of the barrel toward the stopper over a length which is slightly greater than the length of the stopper and in a manner such that the distance between diametrically oppositely located inner wall parts at the area of the deformation varies between a slightly smaller diameter and an at least equally large diameter as the inside diameter of the remaining part of the barrel, so that upon administering an

injection, injection liquid present in the barrel can reach the cannula by flowing past the stopper, and during nurse-aspiration the stopper is held at the area of the deformation, thereby allowing body fluid to reach the part of the barrel present behind the stopper by flowing past the stopper.

4,469,483

RADIOPAQUE CATHETER

Lawrence F. Becker, Chicago, and Christine Pham, Wheeling, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 25, 1982, Ser. No. 411,177
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—280 **9 Claims**

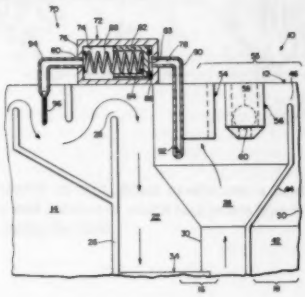
1. A catheter comprising a plastic tubular member, said member including longitudinal stripe means comprising radiopaque material mixed with the plastic of the tubular member, and longitudinal segment means of transparent material positioned beside said stripe means, the material of said stripe means having at least equal elongation and less ultimate tensile strength than the material of said transparent segment means.

4,469,484

SURGICAL DRAINAGE DEVICE WITH AUTOMATIC NEGATIVE PRESSURE RELIEF SYSTEM

Robert J. Kurtz, New York, and Joseph M. LiCausi, Port Jefferson Station, both of N.Y., assignors to Bio Research Inc., Farmingdale, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,435
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—321 **6 Claims**



1. A surgical underwater drainage device for collecting fluids from the body of a patient comprising:

a collection chamber in which fluids from the patient are collected;

an underwater seal chamber having a small arm and large arm, a first opening in said small arm in fluid communication with said collection chamber, a second opening in said large arm and a liquid seal disposed in said large arm and said small arm between said first opening and said second opening;

an outlet port in communication with the second opening in said large arm in said underwater seal chamber;

a separate automatically operated excess negative pressure relief valve means which fluidly connects said collection chamber and the large arm of said underwater seal chamber so as to bypass the liquid seal, said negative relief valve means opening automatically when the pressure in said large arm of said underwater seal chamber exceeds the pressure in said collection chamber by a predetermined amount to relieve the excess negativity in said collection chamber.

4,469,485

USE OF THE 1:2 CHROMIUM COMPLEX OF 1-AMINO-2-(3',5'-DINITRO-2'-HYDROXYPHENYLAZO)-4-SULFONAPHTHALENE AND ALKALI METAL SALTS THEREOF FOR DYEING POLYAMIDES AND OXIDE LAYERS ON ALUMINUM AND ALUMINUM ALLOYS

Hans Grossmann, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

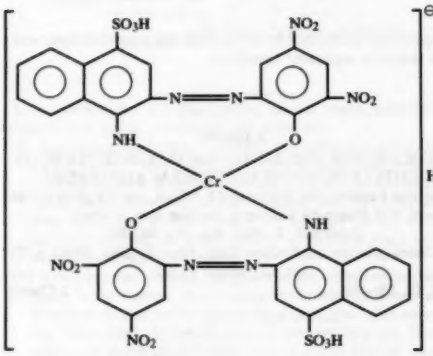
Division of Ser. No. 964,698, Nov. 29, 1978, Pat. No. 4,416,816, which is a continuation-in-part of Ser. No. 373,630, Jun. 26, 1973, abandoned. This application Aug. 22, 1983, Ser. No. 524,993

Claims priority, application Switzerland, Jun. 28, 1972, 9676/72

Int. Cl.[3] **C07C** *143/38;* **C09B** *45/16;* **D06P** *3/04*

U.S. Cl. 8—522 **17 Claims**

1. A process for the coloration of a porous oxide layer on an aluminum or aluminum alloy substrate comprising contacting an aluminum or aluminum alloy substrate having a porous oxide layer thereon with a solution of a dye, said dye being the complex of the formula



or an alkali metal salt thereof.

4,469,486

STABLE BLEND OF COAL AND DIESEL OIL

Dinesh O. Shah; K. C. Adiga, both of Gainesville, Fla., and A. N. SunderRam, Richton Park, Ill., assignors to University of Florida, Gainesville, Fla.

Filed Mar. 18, 1982, Ser. No. 359,277

Int. Cl.[3] **C10L** *1/32*

U.S. Cl. 44—51 **10 Claims**

1. A stable dispersion of powdered coal in petroleum oil comprising 5–50% by weight of pulverized coal; 45–90% by weight of diesel oil or Fuel Oil No. 2; and 10–20% by weight of ethanol.

4,469,487

ARRANGEMENT FOR AND METHOD OF DOSING FUEL IN FLUIDIZED BED REACTOR

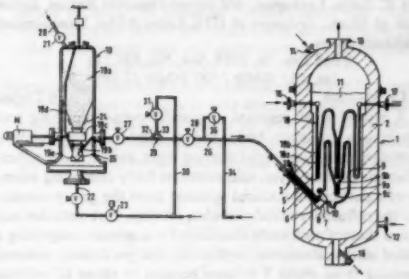
Werner Peters, Bochum; Harald Jüntgen; Karl H. Van Heek, both of Essen; Reinhold Kirchhoff, Hattingen, and Heinrich Wagener, Bochum, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 481,380

Int. Cl.[3] **C10J** *3/50, 3/60*

U.S. Cl. 48—86 R **16 Claims**

1. An arrangement for dosing fuels, particularly caking fuels, in a fluidized bed reactor, comprising an injection pipe for conveying a fuel and having an end provided with an injection nozzle; a jacket pipe for conveying a fluid and surrounding said injection pipe in the fluidizied bed reactor, said jacket pipe having an end provided with a jacket nozzle located in the reactor, said jacket pipe being interrupted prior to said jacket nozzle as considered in a flow direction and at a location



juxtapositioned to said jacket nozzle and a heat exchanger bypassing said location at which said jacket pipe is interrupted and conveying the fluid.

4,469,488

METHOD FOR GASIFYING COAL

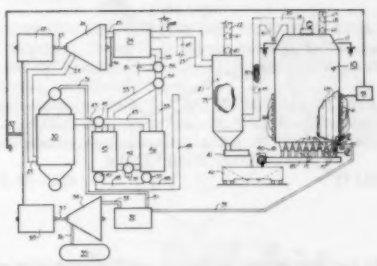
Albert Calderon, 1065 Melrose, Bowling Green, Ohio 43402

Continuation of Ser. No. 153,159, May 27, 1980, abandoned. This application Apr. 6, 1982, Ser. No. 365,899

The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.

Int. Cl.[3] **C10J** *3/10, 3/14, 3/18*

U.S. Cl. 48—202 **36 Claims**



1. A method of gasifying a carbonaceous fuel comprising the steps of charging the carbonaceous fuel into a plurality of compartments whose walls comprise a material which is adaptable to being heated by induction while the wall of each compartment envelopes the fuel which is charged into each compartment and whereifn said plurality of compartments are grouped together and surrounded by an induction coil means so that all the compartments of said plurality of compartments commonly share said induction coil means and said induction coil means does not individually surround any of said compartments, heating said walls of said plurality of compartments by said induction coil means to cause the devolatilization of the carbonaceous fuel contained within each compartment of said plurality of compartments to convert said carbonaceous fuel to coke, subjecting said coke to a steam envoronment to gasify as least a portion of said coke to form water gas ($CO+H_2$), and collecting the gases generated.

4,469,489

COATED COMPOSITE MODIFIED SILICON ALUMINUM OXYNITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 26, 1983, Ser. No. 536,111
Int. Cl.³ B24B 1/00; B24D 11/00
U.S. Cl. 51—295 9 Claims

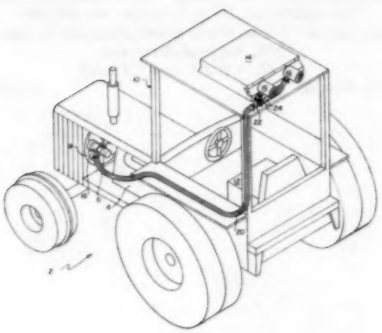
1. A coated wear resistant composite ceramic cutting tool comprising a substrate body and at least one intermediate adherent refractory material coating layer and an outer adherent alumina coating layer; said substrate body consisting essentially of a particulate material selected from the group consisting of the refractory metal carbides, nitrides, carbonitrides and mixtures thereof uniformly distributed in a matrix comprising a modified silicon aluminum oxynitride, said particulate material comprising from about 5 volume percent to about 60 volume percent of said cutting tool and having an average particle size of between about 0.5 microns and about 20 microns; said modified silicon aluminum oxynitride having a modifier selected from the group consisting of the oxides of silicon, yttrium, magnesium, hafnium, zirconium, beryllium, the lanthanides and combinations thereof.

4,469,490

METHOD AND APPARATUS FOR CLEANING AIR ENTERING THE CAB OF A VEHICLE

Thomas W. Wilson, Kimball, Nebr., assignor to Accessory Sales, Inc., Kimball, Nebr.

Filed Oct. 22, 1982, Ser. No. 436,984
Int. Cl.³ B01D 45/12, 45/18
U.S. Cl. 55—1 4 Claims



1. In a vehicle having an internal combustion engine with a radiator, a fan for causing air flow through said radiator, and a cab for housing an operator, the improvement comprising pre-cleaner means for removing dirt from air entering an air-inlet means of said cab, and venturi means positioned and arranged with respect to said fan so that said air flow is in flow communication with said pre-cleaner means so as to draw dirt separated by said pre-cleaner means away from said pre-cleaner means.

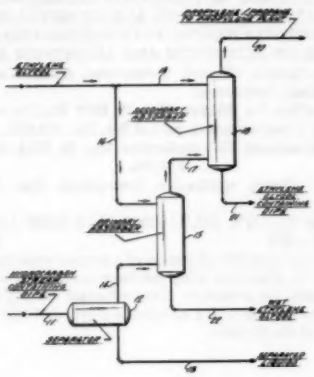
4,469,491

SEPARATION OF DIISOPROPYLETHER FROM HYDROCARBON STREAMS

Lawrence H. Finkel, Wayne, Pa., assignor to Sun Tech, Inc., Philadelphia, Pa.

Filed Apr. 19, 1982, Ser. No. 369,961
Int. Cl.³ B01D 3/40, 53/14; C07C 7/11
U.S. Cl. 55—29 5 Claims

1. A process for the separation of diisopropylether from a hydrocarbon stream containing it, which comprises contacting said stream with ethylene glycol whereby said diiso-



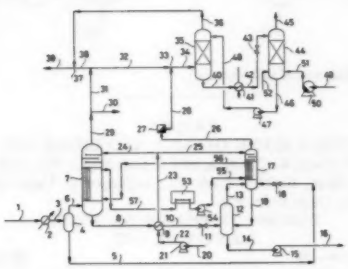
propylether is absorbed by said glycol and a purified hydrocarbon stream is separated therefrom.

4,469,492

PROCESS FOR THE ISOTHERMAL ABSORPTION OF ETHYLENE OXIDE USING FILM ABSORBERS

Vincenzo Laganà, Via Sismondi 43, Milan, and Virginio Cavallanti, Via Pietro da Vailate 8, Vailate; both of Italy

Filed Feb. 8, 1982, Ser. No. 347,076
Claims priority, application Italy, Mar. 2, 1981, 20067 A/81
Int. Cl.³ B01D 47/00
U.S. Cl. 55—49 2 Claims



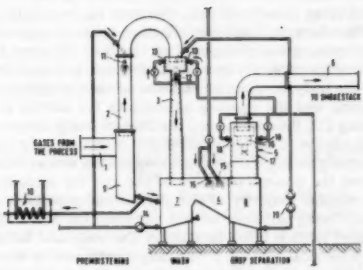
1. In a process for the recovery of the ethylene oxide component contained in a composite gas stream coming from an ethylene oxide production plant, the improvement comprising, first cooling said composite gas stream to a temperature between 5° and 60° C., then feeding the gas stream at a pressure of from 1 to 30 atmospheres to a water-fed isothermal film absorber provided with a water jacket, and isothermally absorbing said ethylene oxide component from said composite gas stream in said isothermal film absorber, removing a high concentration ethylene oxide solution from the bottom of said water-fed isothermal film absorber, feeding said high concentration ethylene oxide solution to a flash vessel and flashing the same, while cooling said isothermal film absorber with water circulated through said water jacket and a cooperating refrigeration unit, and obtaining from the bottom of said flash vessel an ethylene oxide solution free from inerts which can be fed directly to a glycol production plant after recovering the ethylene still in solution.

4,469,493

METHOD AND APPARATUS FOR THE PURIFICATION OF GASES WHICH CONTAIN SOLID AND GASEOUS IMPURITIES

Frans H. Tuovinen, and Kalervo Lehtola, both of Ulvila, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Jun. 15, 1982, Ser. No. 388,629
Claims priority, application Finland, Jun. 26, 1981, 812011
Int. Cl.³ B01D 47/00
U.S. Cl. 55—89 3 Claims



1. A method for the purification of hot gases, especially industrial flue gases, comprising the steps of:

(a) moistening the upward flowing hot gases in a pre-moistening stage by spraying them with a spray of downwards-directed scrubbing liquid obtained from a countercurrent cycle of the scrubbing liquid, flowing part of the scrubbing liquid into a vessel below the pre-moistening stage, nearly saturating the gases passing to the next stage with vaporized scrubbing liquid,

(b) scrubbing and cooling the gases in the actual separation stage, in the venturi, by spraying the scrubbing liquid in a direction co-current to the gas flow, and also with spraying water directed tangentially to the entering gas flow, said water spray additionally rinsing a thin film of water onto the inner surface of the venturi, accumulating the gaseous impurities and solids absorbed into the scrubbing liquid and water into a vessel below the scrubbing stage, continuing the passage of the gases to the second scrubbing stage,

(c) scrubbing the gases arriving in the second scrubbing stage, in the connecting channel, with fresh scrubbing liquid, producing gapless sprays, continuing the passage of the gases tangentially from the second scrubbing stage to the next stage and passing the scrubbing liquid flown into a vessel below the second separation stage into the venturi,

(d) carrying the rising gases in the drop separation stage through a water film and passing them through several drop separation cylinders rinsed continuously with clean water, collecting the falling liquid drops and the water vapor still present in the gases into a vessel below the cylinders, and discharging the drop-free purified gases.

4,469,494

DISC OPERATED GAS PURIFICATION SYSTEM

Willem F. van Weenen, Los Angeles, Calif., assignor to Kinetics Technology International Corporation, Monrovia, Calif.

Filed Jan. 31, 1983, Ser. No. 462,134
Int. Cl.³ B01D 53/04
U.S. Cl. 55—179 11 Claims

1. In a system for directing the flows of the following gases:

(i) feed gas

(ii) product gas

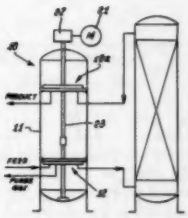
(iii) purge gas

(iv) re-pressurization gas

between multiple vessels V-I, V-II, V-III and V-IV containing absorbent material for components of the feed other than the product gas, the improvement comprising

(a) a control vessel containing structure including rotor means defining gas passages communicable with control vessel ports for the (i)–(iv) gases and selectively communicable with vessel inlet and outlet ports that communicate with the vessels V-I–V-IV,

(b) means to rotate said rotor means about an axis to communicate the gas passages in said structure and rotor means successively with the vessels so that feed gas is passed from the rotor means successively to said vessels, product gas is received by the rotor means successively from the



vessels, purge gas is received by the rotor means successively from the vessels, and re-pressurization gas is passed from the rotor means successively to said vessels,

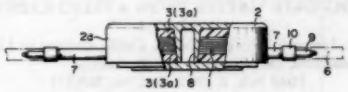
(c) said structure and rotor means including primary relatively rotatable members and containing passages to control the flow of said (i) and (iii) gases, and secondary relatively rotatable members containing passages to control the flow of said (ii) and (iv) gases, said primary members axially separated from said secondary members by space formed therebetween, and there being piping in the space between said pairs of members and communicating with said inlet and outlet ports.

4,469,495

METHOD AND DEVICE FOR DEGASSIFYING LIQUID

Kazuo Hiraizumi, Chiba; Kozo Shirato, Saitama, and Kazuyasu Kawashima, Kanagawa, all of Japan, assignors to Erma Optical Works, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 258,908, Apr. 30, 1981, abandoned. This application Mar. 18, 1983, Ser. No. 476,467
Claims priority, application Japan, Jan. 29, 1983, 58-11683[U]
Int. Cl.³ B01D 53/22
U.S. Cl. 55—189 17 Claims



1. Degassifying apparatus for removing dissolved gas from a liquid, said apparatus comprising:

(a) a degassifying enclosure placed under at least a partial vacuum;

(b) an elongated tube positioned within said enclosure and comprising means for conducting liquid therethrough, said tube being coiled in a substantially spiral configuration; and

(c) a plurality of spacer elements located adjacent to said coil tube in order to maximize contact between said tube and the atmosphere within said enclosure, said plurality of spacer elements including two planar plates, one of said planar plates being positioned between said coiled tube and a bottom wall of said enclosure, the other of said planar plates being positioned between said coiled tube and a top wall of said enclosure.

4,469,496

MEANS FOR SEPARATING ISOTOPES OF HYDROGEN BASED ON THE PRINCIPLE OF GAS CHROMATOGRAPHY

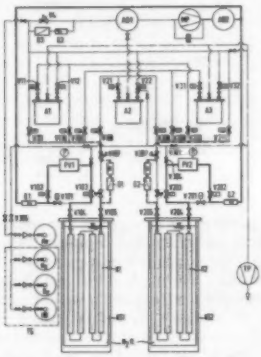
Hans Frischmuth; Jürgen Perchermeier, both of Garching; Anton Stimmelmayr, Marzling, and Heinrich Weichselgartner, Munich, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 555,991

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1982, 3244325

Int. Cl.³ B01D *15/08*

U.S. Cl. 55—197 **14 Claims**



1. A means for separating isotopes of hydrogen contained in a gas mixture based on the principles of gas chromatography, comprising a flow passage for a carrier gas containing a feed pump (MP), at least one separation column with a packing, including a fine-grained active separation material, at least one collector (A1), which is controlled so as to be communicated by a valve arrangement, with a packing of a hydrogen-absorbing material, and a valve arrangement for controlling the separation process, characterised in that the separation material is a fine non-metallic material in which inert fibrous fillers are evenly distributed in an amount of not more than 5 percent by volume.

4,469,497

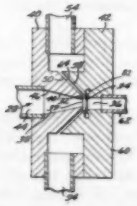
AXISYMMETRICAL SEPARATOR FOR SEPARATING PARTICULATE MATTER FROM A FLUID CARRYING MEDIUM

Hans D. Linhardt, Newport Beach, Calif., assignor to Linhardt & Associates, Inc., Newport Beach, Calif.

Filed Feb. 4, 1982, Ser. No. 345,731

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—282 **29 Claims**



1. A separator adapted for separating particulate matter carried in a carrier gas, from the carrier gas, the separator comprising:

a solid body incorporating an opening leading into a duct having a substantially straight longitudinal axis, adjacent to the opening the duct having walls defining a nozzle axisymmetrically arranged relative to the longitudinal axis of the duct, the nozzle walls positioned at an angle α relative to the longitudinal axis for accelerating the carrier gas toward the longitudinal axis, the duct having adjacent to and downstream from the nozzle a curved portion, the walls of said curved portion being comprised by the body and being axisymmetrical relative to the longitudinal axis of the duct and having an effective radius of curvature R, an opening being disposed in the duct adjacent to the curved portion, the opening leading into a channel formed in the body, a minimum diameter of the duct between the nozzle and the opening adjacent to the curved portion being D^*, the opening and the channel being axisymmetrical relative to the longitudinal axis of the duct, the channel forming an angle β with said longitudinal axis as measured from the downstream side of the axis for receiving the substantial majority of the gas, an outlet portion of the duct being adjacent to said opening, the walls of said outlet portion being formed by the body and being axisymmetrical relative to the longitudinal axis of the duct, said outlet portion having a diameter D_2, and terminating in a second opening in the body, the angle β being at least 90° and the sum of the angles α and β consisting of angle θ wherein θ is approximately between 120° to 180°, R is approximately between 0.04 to 0.20 inches, and D_2/D^* is approximately between 1.085 to 1.52, whereby the gas and particulate matter are subjected to a certrifugal force by the walls of the curved portion and the channel which carries the majority of the particulate matter to flow along the longitudinal axis and into the outlet portion together with an appropriate amount of carrier gas.

4,469,498

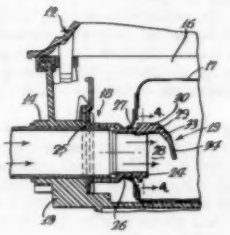
DIRT INTERCEPTOR FILTER BAG MOUNT FOR VACUUM CLEANER

Warren H. Fish, Ramsey County, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 29, 1982, Ser. No. 428,416

Int. Cl.³ B01D *50/00, 51/00*

U.S. Cl. 55—335 **13 Claims**



1. In a vacuum cleaner structure having means defining a suction inlet and means for sucking dirt-laden air at substantial velocity through said inlet into a filter bag and out through an air outlet wherein the dirt is deposited in the filter bag, improved means for connecting the filter bag to said suction inlet comprising

annular wall means having an outlet end, and an inlet end provided with means for removably mounting the wall means to said suction inlet, a connection portion defining means for removably connecting a mouth of the filter bag thereabout for delivery of dirt-laden air from the suction inlet into the filter bag, and a dirt interceptor on said outlet end of the wall means extending fixedly diametrically

across the air flow path defined by said outlet end, said dirt interceptor having a width less than that of said outlet end and being joined to said annular wall means at an upper portion thereof only to extend downwardly therefrom across a major portion of said air flow path and less than fully transversely across the width of said flow path, whereby slower moving entrained dirt particles and suction air being delivered along the bottom and sides of the inner surface of the suction inlet are permitted free movement into the connected bag while more rapidly moving entrained dirt particles at the center of the air flow path and upper portion above the center of the air flow path are intercepted and delivered into the slower moving air at the sides and lower end of the dirt interceptor for delivery with the slower moving dirt particles into the bag for effectively minimizing abrasion of the filter bag in use and extending the useful life thereof.

4,469,499

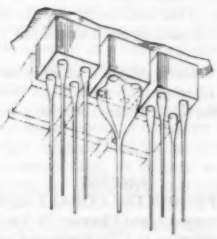
METHOD AND APPARATUS FOR THE MANUFACTURE OF FIBERS

Jacques Lecron, Challes les Eaux; Maxime Manera, Jacob Bellecombette; Jean-Paul Faure, Chignin, and Jean-Pierre Renaudin, Cognin, all of France, assignors to Societe Vetrotex Saint-Gobain, Chambery, France

Continuation-in-part of Ser. No. 377,903, May 13, 1982, Pat. No. 4,391,618, and Ser. No. 374,272, May 3, 1982, Pat. No. 4,398,933, which is a continuation-in-part of Ser. No. 207,712, Nov. 17, 1980, abandoned, said Ser. No. 377,903, is a continuation of Ser. No. 207,712, . This application May 3, 1983, Ser. No. 491,056

Int. Cl.³ C03D *37/085*

U.S. Cl. 65—1 **22 Claims**



1. A method for drawing attenuable material in attenuable condition, such as molten glass, into filaments, characterized by delivering the attenuable material in attenuable condition downwardly through a bushing the bottom of which has a plurality of series of bosses, each series comprising a multiplicity of bosses, each with a bottom wall having a plurality of orifices therethrough, and concurrently drawing one filament from each boss, and thereafter controlling the cooling to effect a separation of the attenuable material into individual filaments formed from the attenuable material delivered from each orifice of the bottom wall of each of said bosses.

4,469,500

METHOD OF CLEAVING A CRYSTAL TO PRODUCE A HIGH OPTICAL QUALITY CORNER

Arthur Miller, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 228,594, Jan. 26, 1981, abandoned. This application May 24, 1982, Ser. No. 381,734

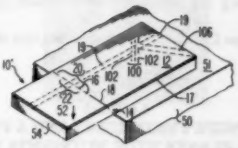
Int. Cl.³ H01L *31/18*

U.S. Cl. 65—112 **7 Claims**

1. A method of producing a high optical quality corner on a crystal having first and second opposed major surfaces and a desired cleavage plane intersecting said first major surface along an intercept, said first major surface being smooth, said crystal being capable of being fractured along said cleavage plane by a fracture beginning at said intercept, said method comprising:

making a fracture initiation mark along only a first portion of said intercept where a poor optical quality corner on said crystal after cleaving is not detrimental;

leaving a second portion of said intercept free of externally induced fracture initiating imperfections, said second portion of said intercept being located where it is desired



to have a high optical quality corner on said crystal after cleaving; and

tensioning said first surface of said crystal in the vicinity of said fracture initiation mark to fracture said crystal along said desired cleavage plane beginning at said fracture initiation mark to produce a cleaved surface having a mirror quality portion which extends to said first surface of said crystal along at least a part of said second portion of that portion of the intersection of said cleaved surface with said first major surface.

4,469,501

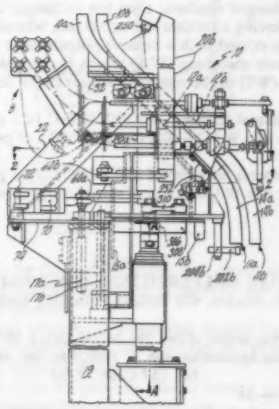
TIMING CONTROL SYSTEM FOR GLASSWARE FORMING MACHINE

Charles M. Kingsbury, Manchester; Bruce R. Beckwith, Unionville; Frank P. Bares, New Hartford, and Edward B. Gardner, Bloomfield, all of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Mar. 4, 1983, Ser. No. 472,316

Int. Cl.³ C03B *7/14*

U.S. Cl. 65—158 **7 Claims**



1. In a glassware forming machine of the rotating table type having a plurality of forming units for rotating about the axis of said machine said machine having a delivery system comprising a plurality of gob guiding units each for periodically and substantially simultaneously delivering a gob of glass to a corresponding blank mold rotating continuously about the axis

of said machine, all gobs being substantially simultaneously delivered being termed a group of gobs, each said gob guiding unit comprising a scoop, a trough and a deflector, a timing control system comprising:

a first means for producing a first signal representative of the start of the drop of each gob within a group;

a second means for detecting each gob near the end of its corresponding deflector for producing a second signal representative of the end of the drop of each of said gobs;

means responsive to the first and second signals associated with a respective one of said gobs within said group for determining the gob drop time of each gob within said group;

display means for selectively displaying one of said gob drop times.

4,469,502

ION EXCHANGER FERTILIZERS AND A PROCESS FOR SUPPLYING PLANTS WITH NUTRIENTS UNIFORMLY AND OVER A LONG PERIOD OF TIME

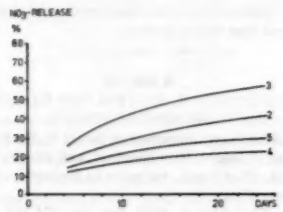
Harold Heller, and Dietmar Schäpel, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,511

Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219659

Int. Cl.³ C05G *1/00*

U.S. Cl. 71—11 **13 Claims**



10. A fertilizer for supplying plants with nutrients uniformly and over a long period of time, comprising a mixture of a nutrient-charged synthetic resin ion exchanger and a mineral fertilizer having a particle size <500 μm, wherein the mineral fertilizer is coated with a massive polyurethane having a particular water absorbing (WA) which is adapted to the water solubility (WS) of the mineral fertilizer in the following manner:

for a mineral fertilizer of a WS (20° C.)<3 g/l a polyurethane of a WA 25–60 g of water/100 g of polyurethane is used;

for a mineral fertilizer of a WS (20° C.)>3 g/l a polyurethane of a WA 0.5–30 g of water/100 g of polyurethane is used.

4,469,503

COAL ASH FERTILIZER COMPOSITIONS

Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807

Continuation-in-part of Ser. No. 54,710, Jul. 5, 1979, abandoned. This application Apr. 4, 1983, Ser. No. 481,647

Int. Cl.³ C05F *11/02*

U.S. Cl. 71—24 **27 Claims**

1. The method of preparing a fertilizer comprising the steps of:

(a) mixing water,
coal ash,
aldehyde,
acid, and
polymerizable organic nitrogen containing compound capable of reacting with at least on and one half mole equivalents of said aldehyde in the presence of said acid to form a relatively water insoluble polymer capable of gradually decomposing to slowly release nitrogen,

(b) polymerizing in-situ, said aldehyde and said polymerizable organic nitrogen containing compound to form said relatively water insoluble polymer capable of gradually decomposing to slowly release nitrogen uniformly distributed on said coal ash, said coal ash functioning as a carrier for said polymer and as a source of micro-nutrients.

4,469,504

PROCESS FOR THE PARTIAL SOLUBILIZATION OF PHOSPHATE ROCK AND OBTAINING ACID AND PHOSPHATE FERTILIZERS THEREFROM

Hosam A. A. Abdel-Hehim; Wagner C. Coelho, and Gloria M. G. Soares, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Aug. 24, 1982, Ser. No. 411,134

Claims priority, application Brazil, Aug. 24, 1981, 8105391

Int. Cl.³ C05B *11/04, 1/00, 11/00*; C01B *25/16*

U.S. Cl. 71—37 **3 Claims**

1. A process for the partial solubilization of phosphate rock to obtain (1) phosphoric acid and (2) fertilizer comprising: mono ammonium phosphate, therefrom comprising:

(a) reacting phosphate rock with acid ammonium sulfate in an amount by weight of 0.4 to 0.7 parts of said acid ammonium sulfate to 1 part of phosphate rock in the presence of 0.5 to 4 parts of water to 1 part of phosphate rock at a temperature of 50° to 110° C. for 30 minutes;

(b) adding concentrated sulfuric acid in an amount of 0.15 to 0.5 parts of concentrated sulfuric acid to 1 part phosphate rock to the mixture of step (a);

(c) maintaining a temperature of 30° to 80° C. and adding ethyl alcohol to the mixture of step (b) in an amount by weight of 2 to 6 parts of ethyl alcohol to 1 part phosphate rock; and

(d) precipiting calcium sulfate crystals from the solution in step (c) and filtering out said crystals to obtain (1) phosphoric acid and (2) fertilizer comprising: mono ammonium phosphate.

4,469,505

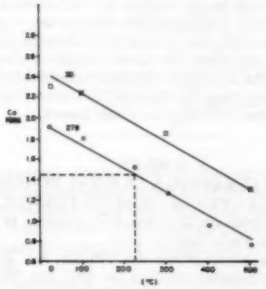
METHOD FOR PRODUCING COBALT METAL POWDER

Michael J. Cheresnowsky, and Clarence D. Vanderpool, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 19, 1980, Ser. No. 208,369

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 BA **9 Claims**



1. A process for producing a fine cobalt metal powder from a cobaltic hydroxide precipitate of the type which yields a cobalt metal powder when reduced having a greater Fisher Sub Sieve Size than desired, said process comprising heat

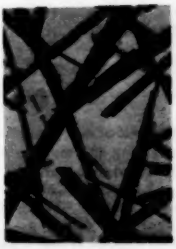
treating said cobaltic hydroxide for a sufficient period of time at a selected temperature, said selected temperature varying inversely with a decreasing desired Fisher Sub Sieve Size within a range of from 200° C. to about 550° C.

4,469,506

PRODUCTION PROCESS OF FERROMAGNETIC IRON POWDER

Haruo Sekiguchi, Chigasaki; Kimiteru Tagawa, Kawasaki; Kazushi Obshima, and Nobuhiro Fukuda, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,381
Int. Cl.³ C22C 1/04
U.S. Cl. 75—0.5 AA 7 Claims



1. Process for producing ferromagnetic iron powder by heating a metal oxyhydroxide or oxide containing iron as its principal metallic element in a reducing atmosphere so as to reduce said metal oxyhydroxide or oxide, comprising the following consecutive steps:

(a) mixing said metal oxyhydroxide or oxide with boron oxide, one or more borates or a mixture thereof at a B/Fe atomic weight ratio of 0.05/100 to 5/100 without dissolving said boron oxide or borates, so that said boron oxide or borates are dispersed in said metal oxyhydroxide or oxide;

(b) heating the mixture obtained from steps (a) to a temperature of from 350° to 500° C. in a non-reducing atmosphere; and

(c) reducing the heated mixture from step (b) at a temperature of from 200° to 450° C. while keeping said heated mixture in contact with hydrogen gas.

4,469,507

PRODUCTION PROCESS OF FERROMAGNETIC IRON POWDER

Haruo Sekiguchi, Chigasaki; Kazufuyu Sudoh, Zushi; Sadao Kobayashi, and Nobuhiro Fukuda, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,638
Int. Cl.³ C22C 1/04
U.S. Cl. 75—0.5 AA 7 Claims

1. Process for producing ferromagnetic iron powder by heating a metal oxyhydroxide or oxide containing iron as its principal metallic element in a reducing atmosphere so as to reduce said metal oxyhydroxide or oxide, comprising the following consecutive steps:

(a) mixing said metal oxyhydroxide or oxide with zinc borate at a B/Fe atomic weight ratio of 0.05/100 to 50 5/100 without dissolving said borate, so that said borate is dispersed in said metal oxyhydroxide or oxide;

(b) heating mixture obtained from step (a) to a temperature of 350° to 500° C. in a non-reducing atmosphere; and

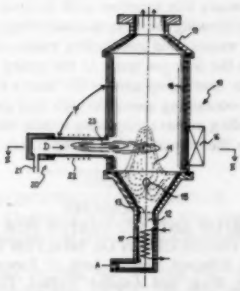
(c) reducing the heated mixture from step (b) at a temperature of 200° to 450° C. while keeping said heated mixture in contact with hydrogen gas.

4,469,508

PROCESS AND INSTALLATION FOR HEATING A FLUIDIZED BED BY PLASMA INJECTION

Jacques Amouroux, Bure S. Yvette, and Siméon Cavadias, Paris, both of France, assignors to Electricite de France (Service National), France

Filed Apr. 20, 1983, Ser. No. 486,761
Claims priority, application France, Apr. 30, 1982, 82 07530
Int. Cl.³ C22B 4/00, 1/10; B23K 9/00
U.S. Cl. 75—10 R 15 Claims



1. A process for heating a fluidised bed, comprising:

feeding a substance in the form of particles into a vertical treatment column;

fluidizing said particles in suspension therein by the axial injection of fluidising gas into a bottom part of the column to form a fluidized bed;

producing a high temperature plasma from a plasmagenic gas of predetermined composition; and

injecting said plasma into the fluidised bed in at least one radial direction from a position ouside said column above said bottom part and wherein said high temperature plasma is confined within a zone of the fluidized bed so that the walls of said column and said bottom part of the column are protected from the high temperature of said plasma.

4,469,509

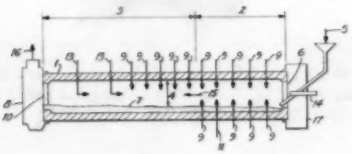
PROCESS OF PRODUCING SPONGE IRON BY A DIRECT REDUCTION OF IRON OXIDE-CONTAINING MATERIAL IN A ROTARY KILN

Karl-Heinz Fischer, Neu-Isenburg; Wolfram Schnabel, Idstein, and Harry Serbent, Hanau, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,960

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208701

Int. Cl.³ C21B *13/08*

U.S. Cl. 75—36 **10 Claims**

1. In a process of producing sponge iron by a direct reduction of iron oxide-containing materials in a rotary kiln below the softening and melting points of the charge, said rotary kiln having a charging end, a discharging end, a plurality of gas-feeding means distributing over the rotary kiln length, a heating-up zone, a reducing zone and a free gas space, said heating-up zone adjacent said charging end, said reducing zone adjacent said discharging end, wherein solid carbonaceous reducing agents having a high content of volatile constituents are used, oxygen-containing gases are blown into the rotary kiln through said gas-feeding means, the charge and the gas atmosphere formed in the rotary kiln are passed through the rotary kiln in cocurrent streams and hot gases are fed into the charging end of the rotary kiln by a central burner, the improvement comprising (a) charging the solid carbonaceous reducing agent having a high content of volatile constituents into the charging end of the rotary kiln together with the iron oxide-containing material, (b) blowing the oxygen-containing gases through said gas-feeding means, said gas-feeding means comprising nozzle blocks, into the free gas space in the rotary kiln and into the charge in the heating-up zone in the rotary kiln, and (c) blowing oxygen-containing gases through said gas feeding means, said gas feeding means comprising nozzle blocks, into the free gas space in the reducing zone in the rotary kiln.

4,469,510

METHOD OF AND APPARATUS FOR THE DIRECT PRODUCTION OF MOLTEN IRON

Paul Metz; Edouard Legille, both of Luxembourg; Francois Schleimer, Esch, and Antoine Weiner, Luxembourg, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Apr. 21, 1982, Ser. No. 370,501

Claims priority, application Luxembourg, Apr. 22, 1981, 83313

Int. Cl.³ C21C *7/00*

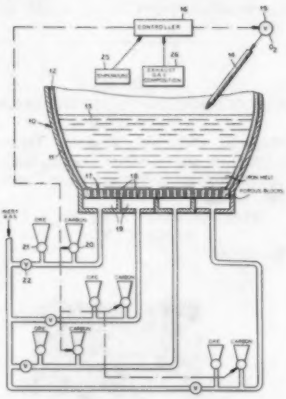
U.S. Cl. 75—51 **5 Claims**

1. A direct method for producing iron, comprising the steps of:

(a) forming a melt of molten iron;

(b) blowing into said melt at the bottom thereof inert carrier gas, particles of carbon entrained with said gas and particles of iron oxide entrained with said gas through refractory blocks of a permeability sufficient to permit the passage of said particles and said carrier gas but inherently preventing the flow of metal from the bath through said blocks;

(c) directing an oxygen blast against the upper surface of said melt; and



(d) controlling the feed of said gas and said particles to said melt and interrupting the same in accordance with the amount of iron added to said melt.

4,469,511

REMOVING PHOSPHORUS FROM IRON

Colin Bodsworth, Slough, England, assignor to National Research Development Corporation, London, England

Filed Sep. 22, 1983, Ser. No. 534,716

Claims priority, application United Kingdom, Sep. 23, 1982, 8227177

Int. Cl.³ C21C *7/00*

U.S. Cl. 75—51 **12 Claims**

1. A method of removing phosphorus from iron to a desired level, consisting essentially of:

(I) resulting a charge of said iron;

(II) contacting said iron with an oxygen-containing substance having a partial pressure of oxygen at 1600° C. equivalent at least 10^{-10} atm to form a slag comprising phosphorus and/or oxygen-containing compounds by:

(i) supplying a gas to the charge before melting is completed; said gas selected from non-reacting gas, a gas having a partial pressure of oxygen at 1600° C. of at most 10^{-2} atm, and mixtures thereof; and/or

(ii) admixing said charge with an oxydized iron material in an amount equivalent to up to 8% of iron ore of the charge weight; and then

(iii) separating said phosphorus and/or oxygen containing compounds by:

(a) removing said slag from the surface of the partially molten charge before the temperature of said surface reaches 1550° C.; or

(b) admixing said slag with a refractory oxide to form a viscous slag, or with a basic oxide to form a fluid slag.

4,469,512

PROCESS FOR PRODUCING HIGH-PURITY ALUMINUM

Hideo Shingu, Kyoto; Kozo Arai, Osaka; Masashi Sakaguchi, Osaka; Toshio Nishide, Osaka; Osamu Watanabe, Osaka; Yasushi Tashiro, Osaka; Ryotatsu Otsuka, Osaka, and Kenji Tsukamoto, Osaka, all of Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

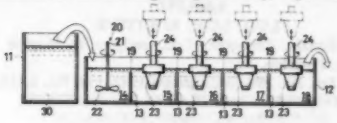
Filed Jul. 29, 1982, Ser. No. 403,023

Int. Cl.³ C22B *23/06*

U.S. Cl. 75—63 **8 Claims**

1. A process for producing high-purity aluminum compris-

ing the steps of melting the aluminum to be purified and containing both eutectic impurities and peritectic impurities to obtain molten aluminum, adding boron to the molten aluminum, and rotating a cooling body immersed in the boron-containing molten aluminum while introducing a cooling fluid to the interior of the cooling body; thereby, crystallizing high-

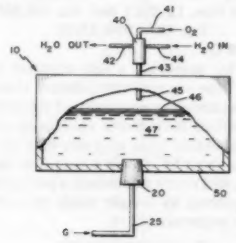


purity aluminum having peritectic impurity concentration and eutectic impurity concentration lower than the original molten aluminum on the surface of the cooling body, and keeping the borides of peritectic impurities and the eutectic impurities away from the surface of the cooling body due to centrifugal force produced by the rotation of the cooling body.

4,469,513
MOLTEN COPPER OXYGENATION

William G. Staib, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jul. 1, 1983, Ser. No. 510,091
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—76 **9 Claims**



1. The improved method of oxygenation of molten smelter copper containing slag and impurities of the type in which a gas is bubbled through the molten copper by means of a submerged porous plug, wherein the improvement is the combination of steps comprising:

a. flowing a continuous stream of molten smelter copper into, through, and out of an oxygenation vessel, said vessel having both porous plug means for bubbling a gas through the molten copper and having surface lance means for injecting a gas onto the surface of the melt; and slowing the flow of molten copper within the vessel and allowing impurities to separate thereby forming a slag layer on the surface of the melt; then

b. while the melt temporarily resides in said vessel, removing the covering slag therefrom with at least one porous plug means by passing a gas under pressure through said porous plug means to stir the melt and push aside the slag covering thereby exposing the surface of the molten copper, and at the same time

c. injecting oxygen onto the exposed surface and into the melt with said oxygen lance means thereby further oxygenating said melt and forming more slag.

4,469,514
SINTERED HIGH SPEED TOOL STEEL ALLOY COMPOSITION

Frederick C. Holtz, Jr., Birmingham, Mich., assignor to Crucible, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 279,942, Aug. 11, 1972, abandoned, which is a continuation of Ser. No. 435,733, Feb. 26, 1965, Pat. No. 3,746,518. This application Oct. 8, 1974, Ser. No. 513,058
The portion of the term of this patent subsequent to Jul. 17, 1990, has been disclaimed.
Int. Cl.³ B22F *3/00*; C22C *38/00*
U.S. Cl. 75—236 **8 Claims**

1. A consolidated integral high speed steel alloy body which is essentially fully dense formed of a hot worked supersaturated solid solution of an inherently alloying composition, said alloy body consisting essentially of a continuous metallurgical phase with a uniformly dispersed hard phase of minute dispersed hard phase particle sizes that are essentially entirely less than 3 microns, said alloying composition consisting essentially by weight of from about 0.5% to about 5.0% carbon, at least 10% of a hard phase-forming element selected from the group consisting of Cr, W, Mo, Ti, Ta, Cb, Zr, Hf, V and Al, and mixtures thereof, and the remainder base metal and incidental impurities, wherein said base metal is iron, and wherein the total amount of iron is at least 30%.

5. A consolidated integral high speed steel alloy body which is substantially fully dense as shown by an improved combination of transverse rupture strength and hardness in cutting tool applications, said body being formed of a hot worked supersaturated solid solution of an inherently alloying composition, said alloy body consisting essentially of a continuous metallurgical phase with a uniformly dispersed hard phase of minute dispersed hard phase particle sizes that are essentially entirely less than 3 microns, said alloying composition consisting essentially by weight of from about 0.8% to about 3.4% carbon, at least 10% of a hard phase-forming element selected from the group consisting of Cr, W, Mo, Ti, Ta, Cb, and V, and mixtures thereof, and the remainder base metal and incidental impurities, wherein said base metal is iron, and wherein the total amount of iron is at least 30%.

4,469,515
PRODUCTION OF PIGMENTS

David T. Pechey, Clydebank, and John H. Coy, Stewarton, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 203,940, Nov. 4, 1980, Pat. No. 4,341,701. This application May 10, 1982, Ser. No. 376,989
Claims priority, application United Kingdom, Jul. 11, 1979, 7938591
Int. Cl.³ C09D *11/02*
U.S. Cl. 106—23 **13 Claims**

1. A method of dyeing plastics, paints, printing inks and oil-based gravure-printing pastes and inks which comprises adding thereto an effective pigmenting amount of a monoazo or disazo pigment prepared by

(a) adding to a solution of a diazonium or tetrazonium salt of an aromatic or heterocyclic amine a solution or suspension containing 0.1–50% by weight of the theoretically required total weight of one or more coupling components, and

(b) using the product from step (a) as an additive in the production of a monoazo pigment, a disazo pigment or a mixture of monoazo and disazo pigments.

4,469,516

PIGMENT PREPARATIONS; PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Manfred Schneider, Eppstein; Reinhold Deubel, Bad Soden am Taunus, and Rainer Schunck, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

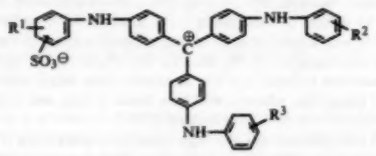
Continuation-in-part of Ser. No. 272,092, Jun. 10, 1981, abandoned, which is a continuation of Ser. No. 137,588, Apr. 7, 1980, abandoned. This application Dec. 16, 1982, Ser. No. 450,468

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1979, 2914259; Japan, Apr. 8, 1980, 55-45296

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—23 14 Claims

1. In a dispersible pigment composition in which the pigment alone is a difficultly dispersible one having the formula



in which R^1, R^2 and R^3 independently of each other are hydrogen, chlorine, bromine, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms, and the pigment is combined with a resinous modifier, the improvement according to which the resinous modifier is

a synthetic resin which is water-soluble when partially or totally neutralized with a nitrogen base, which resin consists essentially of a mixture or a partial reaction product of

(I) an addition compound obtained by reacting 1 part by weight of maleic anhydride with 3 to 6 parts by weight of

(a) an unsaturated fatty acid containing only double bonds which are isolated or, if conjugated, then in units of no more than two conjugated double bonds, or

(b) a polyol ester containing no hydroxy groups, deriving from such an unsaturated fatty acid,

said addition compound being partially esterified with a polyol, and

(II) a low-molecular, curable aminoplast partially etherified with an alcohol selected from the group consisting of primary alcohols and polyols having at least one primary hydroxy group, the components (I) and (II) being present in about equivalent amounts with regard to the ester-forming groups.

4,469,517

SILICATE TREATMENT OF IMPURE SILICA SANDS

Richard C. Cooke, Jr., North Riverside, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Continuation of Ser. No. 305,743, Sep. 25, 1981, abandoned. This application Jan. 20, 1983, Ser. No. 459,421

Int. Cl.³ B28B *7/34*

U.S. Cl. 106—38.3 23 Claims

13. A silica foundry sand useful for the preparation of foundry cores and molds having improved tensile strength prepared by treating impure silica sand containing from about 85% to less than about 99% by weight of silicon dioxide with a solution consisting of an alkali metal silicate and water and heating the mixture of sand and silicate to give a product containing from about 0.2 g to about 1.1 g of silicate per kg of sand on a dry solids basis.

17. A molding composition useful for the preparation of foundry cores and molds having improved tensile strength comprising an impure silica sand containing from about 85% to less than about 99% by weight of silicon dioxide, previously treated by heating with a solution consisting of an alkali metal silicate and water to give a treated sand containing from about 0.2 g to about 1.1 g of silicate per kg of sand on a dry solids basis, and an effective bonding amount of a binder selected from the group consisting of shell resins, base-curing "no-bake" resin components and core oil mixes.

4,469,518

FLUID LOSS ADDITIVE

Lee F. McKenzie, Arlington, Tex., assignor to Hughes Tool Company, Houston, Tex.

Division of Ser. No. 388,334, Jun. 14, 1982, Pat. No. 4,413,681. This application Aug. 15, 1983, Ser. No. 523,253

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 5 Claims

1. An aqueous hydraulic cement composition of the type used in oil well cementing operations and settable to a solid mass, comprising:

cement;

water present in a sufficient amount to produce a pumpable slurry; and

a fluid loss additive comprising the reaction product of a polyamine compound selected from the group consisting of polyalkylenepolyamines, polyalkylenimines, and mixtures thereof and a high molecular weight sulfonated polymer, said sulfonated polymer having a molecular weight in the range of 500,000 to 8,000,000, said polyamine and said high molecular weight sulfonated polymer being prereacted in solution and then dried to form said additive.

4,469,519

SOFT TEXTURED HIGH STRENGTH ALKALI BLUE PIGMENT

Doreswamy R. Iyengar, Holland, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 12, 1982, Ser. No. 441,039

Int. Cl.³ C09B *67/06*

U.S. Cl. 106—288 Q 15 Claims

1. A process for preparing a soft textured high strength resinated Alkali Blue pigment composition characterized by ease of dispersion consisting essentially of subjecting a precipitated resinated Alkali Blue slurry containing about 3 to 10 percent by weight Alkali Blue on a dry basis to a heat treatment at 80° C. to about 98° C. for a period of up to about 15 minutes, filtering said slurry to produce a presscake containing about 15 to 30 percent by weight solids on a dry basis, and freeze drying the presscake.

4,469,520

STABLE METAL PIGMENT COMPOSITIONS EMPLOYING METHYLCHLOROFORM AS SOLVENT

Nobuyuki Ishibe; Warren F. Richey, and Milton S. Wing, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 9, 1984, Ser. No. 568,994

Int. Cl.³ C08K *7/00*; C04B *31/26, 31/00*

U.S. Cl. 106—291 2 Claims

1. Stable methylchloroform compositions for use with metal pigments in paint formulations comprising methylchloroform, a metal pigment and an aromatic polyepoxide wherein the epoxide contains more than one epoxy group per molecule.

4,469,521

CORROSION INHIBITIVE PIGMENTS

George A. Salensky, Whitehouse Station, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1982, Ser. No. 426,724

Int. Cl.³ C04B *1/00*

U.S. Cl. 106—296 11 Claims

1. Method of preparation of corrosion inhibitive pigments which comprises sintering manganomanganic oxide, Mn_3O_4, with a stoichiometric amount of at least one metallic oxide

selected from the group consisting of calcium oxide, zinc oxide, barium oxide, magnesium oxide, strontium oxide, and an equimolar mixture of calcium oxide and boric acid at a temperature of about 500° to about 800° C.

4,469,522

PROCESS FOR TREATING FILLERS WITH FLUOROSILICONE COMPOUNDS

Makoto Matsumoto, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

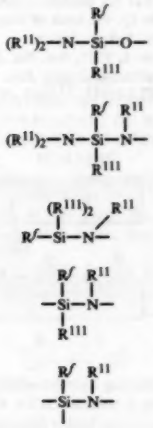
Continuation of Ser. No. 195,579, Oct. 8, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 368,931

Int. Cl.³ C04B *31/40*; C09C *3/00*

U.S. Cl. 106—308 M **7 Claims**

1. A process for treating fillers with a fluorosilicone-nitrogen polymer comprising contacting a filler having a specific surface area of, approximately, 20 to 800 square meters per gram with a fluorine functional silicon-nitrogen polymer comprising:

(1) from 3 to 100 mole percent of chemically combined units selected from the class consisting of:



and

(2) from 0 to 97 mole percent of chemically combined structural units represented by the formula:

$$(R^{111})_cSiO_{\frac{(4-c)}{2}}$$

wherein the silicon atoms of said silicon-nitrogen polymer are joined by linkages selected from Si-O-Si linkages and Si-N(R^{11})-Si linkages, wherein the free valences of said silicon atoms other than those required to form siloxy and silazy units are joined to a member selected from an R^{11} radical and an $(R^{11})_2N$ radical where the ratio of the sum of R^{11} radicals and $(R^{11})_2N$ radicals to the silicon atoms of said silicon nitrogen polymer has a value of from 1.1 to 3, inclusive, where R/ is a fluoroalkyl radical, R^{11} is a radical selected from the class consisting of hydrogen and monovalent hydrocarbon radicals, R^{111} is a radical selected from the class consisting of hydrogen, fluoroalkyl radicals and monovalent hydrocarbon radicals and c is a whole number equal to 0 to 3, inclusive.

4,469,523

BORAX DISPERSION MILLING OF QUINACRIDONES

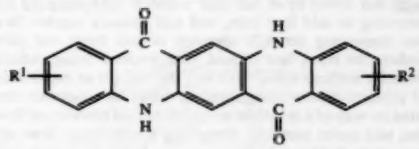
James B. Ganci, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 11, 1983, Ser. No. 512,687

Int. Cl.³ C09B *67/04*

U.S. Cl. 106—309 **7 Claims**

1. In a process for converting oversize crude pigment consisting essentially of quinacridonequinone or at least one quinacridone of the formula:



wherein $-R^1$ and $-R^2$ are the same or different and are selected from the group consisting of —H, —F, —Cl, $-CH_3$ and $-OCH_3$ in a system substantially free of free water, the improvement consisting essentially of milling said crude pigment in a ball or rod mill in the presence of from 3–10 times by weight based on pigment of borax hydrate and from 5–40% by weight based on pigment of a liquid which is a monohydric alcohol containing from 4–8 carbon atoms or a polyethylene glycol of 150–600 molecular weight and recovering a pigmentary grade quinacridone material.

4,469,524

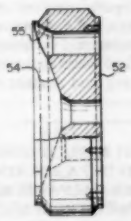
CONTINUOUS PROCESS AND APPARATUS FOR MODIFYING CARBOHYDRATE MATERIAL

Per G. Assarsson, Toronto, and Joseph H. Nagasuye, Mississauga, both of Canada, assignors to St. Lawrence Technologies Limited, Mississauga, Canada

Continuation-in-part of Ser. No. 167,543, Jul. 10, 1980, which is a continuation-in-part of Ser. No. 070,438, Aug. 28, 1979, abandoned. This application Jul. 26, 1982, Ser. No. 402,030

Int. Cl.³ C13K *1/06*

U.S. Cl. 127—1 **15 Claims**



1. A chemical reactor comprising (a) an elongated tubular primary reactor having a plurality of laterally spaced flow tubes passing through a heat exchange vessel, said heat exchange vessel being adapted to receive superatmospheric steam, (b) a feed inlet to said primary reactor connected by way of a manifold to inlets of said plurality of flow tubes, said manifold comprising a truncated conical member with an open small end and a large end closed by a plate member, the open small end connecting to said feed inlet, and said primary reactor flow tubes connecting through openings in said large end plate member, the inner face of said plate member being radially outwardly inclined toward the axis thereof, (c) tube member connected by way of a manifold to outlets of said plurality of flow tubes, the tubes being arranged to provide substantially equal flow velocities through the primary reactor flow tubes, (d) a first flow restricting orifice connected to said single outlet

tube, (e) an elongated secondary reactor tube having the inlet thereof flow connected to said first orifice outlet and (f) positive displacement pump means connected to said feed inlet tube.

11. A starch reactor comprising (a) an elongated tubular primary reactor having a plurality of parallel flow tubes passing through a heat exchange vessel, said heat exchange vessel being adapted to receive superatmospheric steam, (b) a feed inlet to said primary reactor connected by way of a manifold to inlets of said plurality of flow tubes, said inlet manifold comprising a truncated conical member with an open small end and a large end closed by an end plate member, the open small end connecting to said feed inlet, and said primary reactor flow tubes connecting through openings in said large end plate member, the inner face of said plate member being radially outwardly inclined toward the axis thereof, (c) an outlet from said primary reactor comprising an outlet tube member connected by way of a manifold to outlets of said plurality of flow tubes, said outlet manifold comprising a continuous flow collector connected to said primary reactor flow tube outlets, said collector having a truncated conical shape with a closed large end closed by an end plate member and an open small end, the open small end connecting to said outlet tube member, and said primary reactor flow tubes connecting through openings in said large end plate member, and the tubes being arranged to provide substantially equal flow velocities through the primary reactor flow tubes, (d) a first flow restricting orifice connected to said single outlet tube, (e) an elongated secondary reactor tube having the inlet thereof flow connected to said first orifice outlet and (f) positive displacement pump means connected to said feed inlet tube.

4,469,525

MEMBRANE REMOVER/ETCHANT

Paul D. Dodge, Apple Valley, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Jan. 19, 1983, Ser. No. 459,238
Int. Cl.³ B08B *7/00*; **C09K** *13/06*
U.S. Cl. 134—3 **28 Claims**

1. A process for preparing a membrane containing concrete surface for application of a coating, said process comprising applying to said concrete surface a mixture including by weight 1 to 10 parts organic solvent having a KB value of at least 89, 30 to 50 parts co-solvent, 1 to 5 parts acid stable surfactant and 25 to 50 parts inhibited acid wherein said organic solvent disintegrates the membrane; subsequently, adding water to said mixture on said surface to activate said acid, permitting said mixture and water to act on said surface to etch said surface and removing said mixture and water from said surface.

4,469,526

SYSTEM FOR REMOVING ADHERING LIQUID FROM OBJECTS AFTER A GALVANIC OR CHEMICAL SURFACE TREATMENT

Helmut Budinsky, Winkelhaid, and Horst Bläsing, Berlin, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,663
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1981, 3133629
Int. Cl.³ B08B *5/02, 7/04*
U.S. Cl. 134—25.4 **18 Claims**

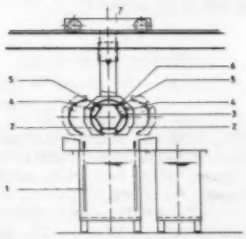
10. A method of cleaning objects from adhering liquid surface treatment medium after galvanic and/or chemical surface treatment and recovery of the liquid medium, comprising the steps of

accommodating objects to be treated in a drum aggregate;

lowering the drum aggregate into a working container of said liquid so as to contact the objects with said liquid;

lifting the drum aggregate out of the working container after treating the objects in the liquid;

bringing two half shells above the drum aggregate to embrace the latter so that only in a lower region of the drum aggregate a gap between the shells remains; and



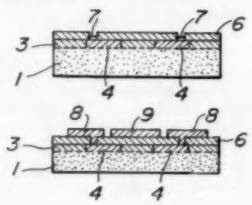
blowing a gas stream through the half shells to the drum aggregate so that adhered liquid treating medium is removed and flows directly back to the working container through the gap.

4,469,527

METHOD OF MAKING SEMICONDUCTOR MOSFET DEVICE BY BOMBARDING WITH RADIATION FOLLOWED BY BEAM-ANNEALING

Takuo Sugano, and Ho Q. Vu, both of Tokyo, Japan, assignors to Tokyo University, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,253
Claims priority, application Japan, Jun. 19, 1981, 56-93735
Int. Cl.³ H01L *21/263, 21/26*
U.S. Cl. 148—15 **10 Claims**



1. A method of producing a semiconductor device, comprising steps of irradiating a semiconductor substrate with radiation so as to generate crystal lattice defects therein for making the entire semiconductor substrate semi-insulating providing a semiconductive surface layer portion on the surface of said semi-insulating substrate, and providing a semiconductor device in this semiconductive surface layer portion.

4,469,528

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE OF GAAS BY TWO SPECIES ION IMPLANTATION

Michel Berth, Antony; Camille Venger, Montfermeil, and Gérard M. Martin, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,322
Claims priority, application France, Sep. 18, 1981, 81 17664
Int. Cl.³ H01L *29/34, 21/265*
U.S. Cl. 148—1.5 **7 Claims**

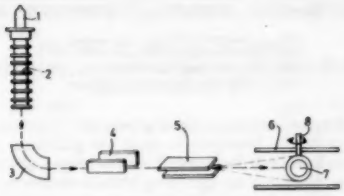
1. A method of manufacturing a seimconductor device comprising the steps of

providing a semi-insulating substrate of gallium arsenide,

implanting silicon ions into a first surface of said substrate to form an N-type gallium arsenide layer,

selectively implanting oxygen ions into said N-type layer to form isolated regions extending through said layer to said

substrate, said isolated regions dividing said N-type layer into mutually isolated islands to form locations for semiconductor circuit elements, and



subjecting the semiconductor body thus formed to a heat treatment.

4,469,529

METHOD FOR HEATING SEMICONDUCTOR WAFER BY MEANS OF APPLICATION OF RADIATED LIGHT WITH SUPPLEMENTAL CIRCUMFERENTIAL HEATING

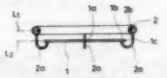
Yoshiki Mimura, Kanagawa, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

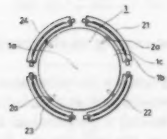
Filed Nov. 30, 1982, Ser. No. 445,493

Claims priority, application Japan, Dec. 4, 1981, 56-194575; Jun. 30, 1982, 57-111499

Int. Cl.³ H01L *21/265, 21/26*

U.S. Cl. 148—1.5 14 Claims





1. A method for heating a semiconductor wafer by means of application of light radiated from a light source, which method comprises the steps of arranging subsidiary electrical heating means adjacent to and extending along the circumference of the semiconductor wafer; and heating the semiconductor wafer by means of application of light radiated from the light source to the semiconductor wafer, including application of the light to the circumferential portion of the semiconductor wafer, while additionally heating the semiconductor wafer at its circumferential portion by the subsidiary heating means to thereby provide a uniform temperature across the surface of the wafer.

4,469,530

METHOD FOR REDUCING THE HARDENING DISTORTION DURING CASE HARDENING OF LARGE TOOTHED RIMS FORMED OF STEEL AND SUPPORT BODY MEMBERS SUITABLE FOR SUCH PURPOSE

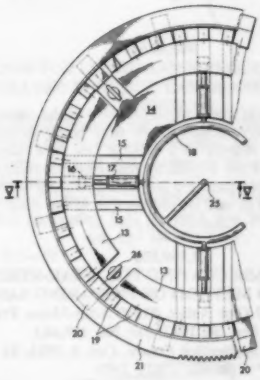
Urs Wyss, and Johannes Federer, both of Zürich, Switzerland, assignors to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Jun. 11, 1982, Ser. No. 387,327

Claims priority, application Switzerland, Jun. 19, 1981, 4063/81

Int. Cl.³ C21D *9/32*

U.S. Cl. 148—16.5 6 Claims



1. A method for the reduction of the distortion on hardening during case hardening of large toothed rims formed of steel, comprising the steps of:

shrinking the carburized toothed rim during cooling, starting from its hardening temperature where the steel is in its austenitic condition, and during the γ/α-transformation of its core material, onto a substantially disc-like support body member;

further cooling the assembly composed of the toothed rim and the disc-like support body member; and

during such further cooling of the assembly of the toothed rim and disc-like support body member down to room temperature limiting the increase of the stress in the toothed rim by means of said disc-like support body member.

4,469,531

SYSTEM FOR PHOSPHATING OF OBJECTS TO BE TREATED

Yasuo Tokushima; Yoshinobu Takahashi, and Kenji Fukuta, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 282,002, Jul. 10, 1981, abandoned. This application Jan. 5, 1983, Ser. No. 455,851

Claims priority, application Japan, Sep. 1, 1980, 55-123084[U]

Int. Cl.³ C23F *7/10*

U.S. Cl. 148—6.15 R 6 Claims

1. A system for phosphating objects, such as automobile bodies, each having a bottom portion of complicated configuration, said system comprising:

a tank for holding a phosphating fluid and having an inlet side and an outlet side;

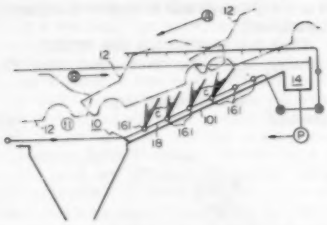
means for generating recirculation of the fluid in the tank;

conveyor means for continuously conveying the objects from said inlet side to said outlet side of said tank in such a manner that the objects are fully dipped into the fluid;

said tank having a sloped bottom at said inlet side thereof and said conveyor means having an inclination substan-

tially the same as that of said sloped bottom of the tank; and

gush-type spraying nozzle means, arranged on said sloped bottom of the tank and connected to the recirculation means, for generating a flow of fluid from said sloped



bottom towards said bottom portions of the objects being conveyed, the direction of the flow being inclined rearwardly with respect to a vertical line in a direction of conveyance of the objects by the conveyor means at said inlet side of said tank and inclined upwardly with respect to the surface of said sloped bottom of the tank.

4,469,532

CHROMIUM-BASE COATING FOR WEAR-RESISTANT STEEL AND METHOD OF PREPARING SAME

Guy R. Nicolas, 22 Clos Nollet, 91200 Athis-Mons, France

Filed Sep. 30, 1982, Ser. No. 428,662

Claims priority, application France, Oct. 6, 1981, 81 18779

Int. Cl.³ C23F 7/00

U.S. Cl. 148—6.35 **11 Claims**

1. A method for obtaining an abrasion resistant coating on steel, comprising:

a first step comprising boriding steel in an austenitic state at a temperature less than or substantially equal to 950° C. for a period of time greater than or substantially equal to 4 hours to form a layer of iron-borides Fe_2B, FeB of a thickness of at least 30 μm; and

a second step comprising chromizing said steel at a temperature less than or substantially equal to 980° C. for a period of time greater than or substantially equal to 10 hours; wherein said method produces a coating on said steel consisting of an outer layer and an inner layer, said outer layer consisting essentially of the phase $(Cr,Fe)_2B$ of a thickness of at least 12 μm and said inner layer consisting essentially of the phase $(Fe,Cr)_2B$ of a thickness of at least 18 m, wherein Cr_1Fe, and B designate chromium, iron, and boron respectively.

4,469,533

METHOD OF PRODUCING GRAIN ORIENTED SILICON STEEL SHEETS OR STRIPS HAVING HIGH MAGNETIC INDUCTION AND LOW IRON LOSS

Yukio Inokuti; Yo Ito, both of Chiba, and Hiroshi Shimanaka, Funabashi, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

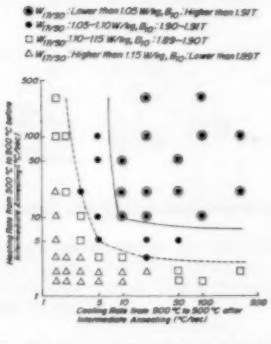
Filed Aug. 18, 1983, Ser. No. 524,390

Claims priority, application Japan, Aug. 18, 1982, 57-142123; Mar. 24, 1983, 58-47931

Int. Cl.³ H01F 1/04

U.S. Cl. 148—111 **7 Claims**

1. In a method of producing grain oriented silicon steel sheets or strips having high magnetic induction and low iron loss, wherein a silicon steel slab having a composition consisting of 0.01–0.06% by weight of C, 2.0–4.0% by weight of Si, 0.01–0.20% by weight of Mn, 0.005–0.1% by weight in a total amount of at least one of S and Se, and the remainder being substantially Fe is hot rolled, the hot rolled sheet is subjected to a normalizing annealing and then subjected to at least two cold rollings with an intermediate annealing between them to produce a cold rolled sheet having a final gauge, and the cold rolled sheet is subjected to a primary recrystallization annealing concurrently effecting decarburization and then subjected to a final annealing to develop secondary recrystallized grains having {110}<001> orientation, the improvement compris-



ing carrying out such rapid heating and rapid cooling treatments in the intermediate annealing that heating from 500° C. to 900° C. of the first cold rolled sheet is carried out at a heating rate of at least 5° C./sec, and cooling from 900° C. to 500° C. of the steel sheet heated in the intermediate annealing is carried out at a cooling rate of at least 5° C./sec.

4,469,534

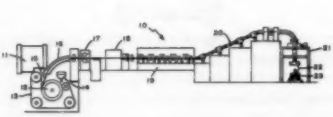
METHOD FOR CONTROLLED TEMPERATURE ACCUMULATOR FOR ELONGATED MATERIALS

Jerry M. Hesterlee, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Division of Ser. No. 332,991, Dec. 12, 1981, Pat. No. 4,421,304. This application Aug. 16, 1982, Ser. No. 408,378

Int. Cl.³ C21D 9/52

U.S. Cl. 148—156 **6 Claims**



1. A method of heat treating an elongated metallic material comprising:

(a) continuously advancing the elongated metallic material along a predetermined path at a variable rate into contact with a cylinder having a longitudinal axis by adding the metallic material to the cylinder at a first variable rate,

(b) forming a continuously variable length of the elongated material into a plurality of helical wraps around said cylinder with a first rotatable guide means, and forming a heat treatment zone associated with said cylinder,

(c) heating said cylinder to a predetermined temperature value within a range of desired heat treatment temperature values,

(d) maintaining the elongated metallic material helical wraps in contact with said cylinder until thermal treatment is completed, and

(e) continuously advancing the elongated metallic material away from said heat treatment zone at a second variable rate with a second rotatable guide means.

4,469,535

METHOD OF FABRICATING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Shigeo Kuroda, Ohme; Takahiko Takahashi, Kodaira, and Akio Anzai, Tanashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1983, Ser. No. 457,219
Claims priority, application Japan, Jan. 25, 1982, 57/8934
Int. Cl.[1] H01L *21/22*
U.S. Cl. 148—187 4 Claims

1. A method of fabricating semiconductor integrated circuit devices, comrising the steps of preparing a semiconductor body having a main surface; forming a first mask of an oxidation impermeable material over said main surface, said first mask covering selected areas of said main surface and exposing a first area of said main surface, at which an isolating region is to be formed, and at least one second area of said main surface, which is surrounded by and spaced apart from said first area; forming a second mask of an oxidation impermeable material to cover said second area exposed by said first mask and to expose said first area; oxidizing said semiconductor body having said first and second masks to form an oxide film extending into said semiconductor body in said first area not covered by said masks; removing said second mask from said main surface; and introducing impurities into said semiconductor body from said first mask through said second area to form a semiconductor region.

4,469,536

ALLOYS AND METHOD OF MAKING

Donald W. Forester, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 10, 1982, Ser. No. 440,687
Int. Cl.[3] C22C *19/00*
U.S. Cl. 148—403 11 Claims

1. A metastable, amorphous alloy consisting essentially of $A_{1-x}Bi_x$, where A is selected from the group consisting of iron and cobalt and 0.1 x 0.3.

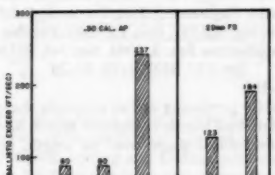
2. A film comprising a metastable amorphous alloy upon a suitable substrate, said substrate consisting essentially of glass, fused quartz or polyethylene, and said alloy consisting essentially of $A_{1-x}Bi_x$, where A is selected from the group consisting of iron and cobalt and 0.1 x 0.3.

4,469,537

ALUMINUM ARMOR PLATE SYSTEM

Richard F. Ashton, and David S. Thompson, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jun. 27, 1983, Ser. No. 507,687
Int. Cl.[3] C22C *21/06*
U.S. Cl. 148—440 16 Claims



1. A method of producing improved aluminum alloy armor plate, comprising:

A. Providing an ingot consisting of about 5.0 to 6.5% magnesium and about 0.60 to 1.20% manganese, the total of magnesium and manganese being in the range of about 6.0 to 6.7%, the balance being aluminum and impurities and incidental elements;

B. Hot rolling the ingot into plate; and

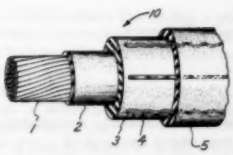
C. Cold rolling said plate to a cold rolled reduction of at least about 19%.

4,469,538

PROCESS FOR CONTINUOUS PRODUCTION OF A MULTILAYER ELECTRIC CABLE AND MATERIALS THEREFOR

Robert M. Wade, Wabash, Ind.; George N. Benjamin, Stamford, Conn.; Marwick H. Solomon, Marion, and Daniel H. Jessop, Middletown, both of Ind., assignors to Anaconda-Ericsson, Inc., Malvern, Pa.

Continuation of Ser. No. 233,303, Feb. 10, 1981, abandoned.
This application Feb. 22, 1983, Ser. No. 468,777
Int. Cl.[3] H01B *13/14*
U.S. Cl. 156—51 17 Claims



1. A process for continuously manufacturing a multilayer electric cable comprising the steps of:

(a) providing an elongated conductive core;

(b) extruding at least one extrudable unvulcanized polymeric material around said elongated conductive core to form at least one layer of inner polymeric material coaxial with and contiguous to said conductive core;

(c) extruding an extrudable unvulcanized polymeric material capable of being strippably bonded to said inner polymeric material and comprising:

(i) a copolymer of ethylene alkylacrylate, and a monoalkyl ester of 1-4 butenedioic acid;

(ii) conductive carbon black; and

(iii) a curing agent;

around said inner polymeric material to form a semiconducting outer layer of polymeric material coaxial with and contiguous to said inner polymeric material;

(d) simultaneously vulcanizing the combination of said inner and outer unvulcanized polymeric materials in a pressurized, high temperature, dry gas atmosphere; and

(e) during said simultaneous vulcanizing step, strippably bonding said outer polymeric material and said inner polymeric material whereby the surfaces of the contiguous layers of said multilayer cable are minimally contaminated, and both the uniformity of adhesion between the layers and the continuity of the electric shield are enhanced.

9. A process for continuously manufacturing a multilayer electric cable as in claims 1 or 2 further comprising the step of incorporating a plurality of axially extending drain wires disposed within the semiconducting unvulcanized outer layer after the semiconducting outer layer of polymeric material has been extruded.

4,469,539

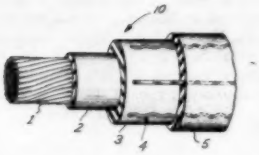
PROCESS FOR CONTINUOUS PRODUCTION OF A MULTILAYER ELECTRIC CABLE

Robert M. Wade, Wabash, Ind.; George N. Benjammin, Stamford, Conn.; Marwick H. Solomon, Marion, and Daniel H. Jessop, Middletown, both of Ind., assignors to Anaconda-Ericsson, Inc., Malvern, Pa.

Continuation of Ser. No. 288,503, Jul. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 233,303, Feb. 10, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 506,584

Int. Cl.³ H01B *13/14*

U.S. Cl. 156—51 **13 Claims**



1. A process for continuously manufacturing a multilayer electric cable comprising the steps of:

(a) providing an elongated conductive core;

(b) extruding at least one extrudable unvulcanized polymeric material around said elongated conductive core to form at least one layer of inner polymeric material coaxial with and contiguous to said conductive core;

(c) extruding an extrudable unvulcanized polymeric material capable of being strippably bonded to said inner polymeric material and comprising:

(i) a copolymer of ethylene, alkylacrylate, and monoalkyl ester of 1–4 butenedioic acid;

(ii) conductive carbon black;

(iii) a curing agent for said copolymer; and

(iv) polyethylene or a polyethylene copolymer in an amount not to exceed 50 parts by weight of total polymer;

around said inner polymeric material to form a semiconducting outer layer of polymeric material coaxial with and contiguous to said inner polymeric material;

(d) simultaneously vulcanizing the combination of said inner and outer unvulcanized polymeric materials in a pressurized, high temperature, dry gas atmosphere; and

(e) during said simultaneous vulcanizing step, strippably bonding said outer polymeric material and said inner polymeric material whereby the surfaces of the contiguous layers of said multilayer cable are minimally contaminated, and both the uniformity of adhesion between the layers and the continuity of the electric shield are enhanced.

6. A process for continuously manufacturing a multilayer electric cable as in claim 1 or 2 further comprising the step of incorporating a plurality of axially extending drain wires disposed within the semiconducting unvulcanized outer layer after the semiconducting outer layer of polymeric material has been extruded.

4,469,540

PROCESS FOR PRODUCING A HIGHLY BULKY NONWOVEN FABRIC

Yasuhiko Furukawa; Hiromu Sonoda, and Taizo Sugihara, all of Shigaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 27, 1982, Ser. No. 402,275

Claims priority, application Japan, Jul. 31, 1981, 56-120513

Int. Cl.³ B29J *5/00*

U.S. Cl. 156—62.4 **1 Claim**

1. A process for producing a highly bulky nonwoven fabric which comprises:

(a) melt-spinning a first component consisting of a crystalline propylene polymer and a second component consisting of an ethylene polymer into composite fibers having a side-by-side or sheath-core configuration so that the second component can occupy at least a portion of the fiber surface continuously in the lengthwise direction of the fibers, the Q value, ratio of the weight average molecular weight to the number average molecular weight of said first component after melt-spinning being 3.5 or greater, to prepare unstretched fibers;

(b) collecting said unstretched fibers into the form of a continuous tow;

(c) preheating the resultant tow to a temperature of 80° C. or higher but lower than the melting point of said second component in advance of stretching,

(d) successively stretching said tow in a stretch ratio of three times or more the original length thereof, in which ratio neither of said composite components break;

(e) cooling the resulting stretched tow down to a temperature below the preheating temperature, at and after the point where the stretching has been finished,

(f) cooling the stretched tow down to 50° C. or lower and then drawing it by means of a pair of nip rolls, at least one of which is of a non-metal, to obtain heat-adhesive composite fibers having apparent crimps, the number of which is 4 to 12 per inch and the percentage crimp modulus of which is 75% or higher, and having substantially no latent crimpability; and

(g) subjecting a web consisting only of said heat-adhesive composite fibers or containing at least 20% by weight of said heat-adhesive composite fibers to heat treatment at a temperature equal to or higher than the melting point of said second component of the composite fibers, but lower than the melting point of said first component thereof, to obtain a highly bulky nonwoven fabric stabilized in structure mainly by the melt-adhesion of the second component of said heat-adhesive composite fibers.

4,469,541

METHOD FOR FORMING REINFORCED PLASTIC COMPOSITE ARTICLES

William B. Goldsworthy, Palos Verdes Estates, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Division of Ser. No. 329,757, Dec. 11, 1981, Pat. No. 4,440,593. This application Jan. 3, 1984, Ser. No. 567,647

Int. Cl.³ B32B *1/10, 31/26*

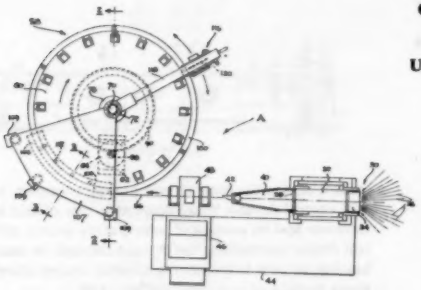
U.S. Cl. 156—180 **24 Claims**

1. A method for producing and an arcuately shaped filament containing reinforced plastic composite article having a non-constant cross-sectional shape over its length, said method comprising:

(a) introducing a filament containing reinforcing material into an elongate die channel created by a first arcuately shaped die-forming member and an arcuately shaped second die-forming member, and where said first die-forming member has a recess which is of non-constant cross-sectional shape, said recess and hence said die channel having a first channel portion of different cross-sectional shape than a second contiguous channel portion thereof so to be of non-constant cross-sectional shape over its length,

(b) moving at least said first die-forming member and simultaneously pulling therewith the reinforcing material through the die channel so that the reinforcing material is simultaneously disposed in both die channel portions at a portion of the time during movement of at least said first die-forming member,

(c) applying a curing energy to the material in each of said die channel portions to thereby cure a binder impregnated



therein and thereby form a composite article having a non-constant cross-sectional shape so that said article has a first section with a first cross-sectional shape and a second contiguous integrally formed section with a second cross-sectional shape different than said first cross-sectional shape, and

(d) continuing to move said first die-forming member to permit exit and removal of the composite article from the die channel.

4,469,542

METHOD OF MAKING A PIECE OF TUBE FROM A FLAT WEB OF FLEXIBLE MATERIAL, AND APPARATUS FOR CARRYING OUT THE METHOD

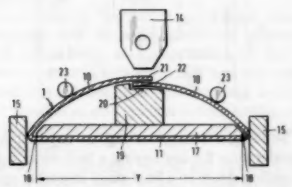
Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Development S.A., Pully, Switzerland

Filed Sep. 2, 1983, Ser. No. 529,064

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3233098; Feb. 22, 1983, 3306053

Int. Cl.³ B31B *5/26, 1/42*

U.S. Cl. 156—203 **13 Claims**



1. A method of making a piece of tube from a flat web of flexible material, particularly paper coated with plastics, by grooving, stamping, cutting and folding, wherein the web is intermittently fed from a storage roll, formed into a tube by folding over longitudinal edges of the web which are then continuously interconnected by adhesion, welding or the like, and the web is severed transversely into separate tubes, and wherein before the longitudinal edges of the web are joined, the web is partly incised at least from one longitudinal side, transversely to the conveying direction, the tube is formed only by folding in these side sections divided by the incisions, the non-incised part of the web is kept supported substantially flat, and when the longitudinal edges of the web have been joined, the flat non-incised portion is severed in line with the previous incisions.

4,469,543

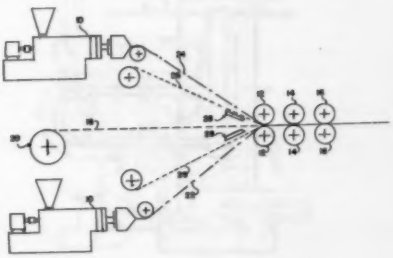
LAMINATION OF HIGHLY REINFORCED THERMOPLASTIC COMPOSITES

Leon Segal, and Anthony Testa, both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 964,315, Nov. 29, 1978, abandoned. This application Apr. 22, 1980, Ser. No. 142,580

Int. Cl.³ C09J *5/06;* **B32B** *31/08*

U.S. Cl. 156—283 **16 Claims**



1. A method of continuously laminating a polyamide sheet comprised of at least one layer of filler reinforced polyamide resin contiguous to a resin impregnated reinforcing glass mat, comprising steps of:

feeding at least one layer of filler reinforced polyamide resin between a pair of laminating rolls, said one layer heated to above its melt temperature;

feeding a layer of fiberglass mat between the pair of laminating rolls with the at least one layer of filler reinforced polyamide;

feeding a layer of unfilled polymer between the fiberglass mat and each filler reinforced polyamide layer, said unfilled polymer layer being heated to at least its melt temperature, less viscous than the filler reinforced layer, and compatible with the polyamide of the filler reinforced polyamide layer to the laminating rolls; and

laminating the at least one layer of filler reinforced polyamide layer to the layer of glass mat, with layers of unfilled polymer between the fiberglass mat and each filler reinforced polyamide layer, between the laminating rolls, whereby the less viscous, heated, unfilled polymer layer is thoroughly impregnated into the glass mat and each filler reinforced polyamide layer adheres to the impregnated glass mat.

10. A method of continuously laminating a thermoplastic sheet comprised of at least one layer of filler reinforced thermoplastic resin contiguous to a resin impregnated reinforcing glass mat, comprising the steps of:

feeding at least one layer of filler reinforced thermoplastic resin between a pair of laminating rolls, said one layer heated to above its melt temperature;

feeding a layer of fiberglass mat between the pair of laminating rolls with the at least one layer of filler reinforced thermoplastic;

feeding a layer of unfilled polymer between the fiberglass mat and each filler reinforced thermoplastic layer, said unfilled polymer layer being heated to at least its melt temperature, less viscous than the filler reinforced thermoplastic layer, and compatible with the thermoplastic of the filler reinforced thermoplastic layer; and

laminating the at least one layer of filler reinforced thermoplastic layer to the layer of glass mat, with layers of unfilled polymer between the fiberglass mat and each filler reinforced thermoplastic layer, between the laminating

rolls, whereby the less viscous, heated, unfilled polymer layer is thoroughly impregnated into the glass mat and each filler reinforced thermoplastic layer adheres to the impregnated glass mat.

4,469,544

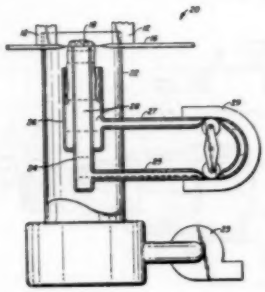
ETCHING FOUNTAIN

Jack E. Goodman, Germantown, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 28, 1983, Ser. No. 546,618

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—345 **15 Claims**



1. An etching fountain apparatus comprising:

an outer jacket, said jacket having a sealed base and an open end opposite to the base, said open end incorporates means for holding a work piece;

means for creating a downward flow of air from the opening to the base connected to the base;

a central inner chamber within the outer jacket, said inner chamber closed on the end nearest the base of the outer jacket and open on the end opposite thereto, said open end of the chamber is situated below the open end of the outer jacket and lower but substantially level with the means for holding the work piece;

means for injecting an etchant fluid into the base portion of said inner chamber, said means for injecting passes through the outer jacket;

an overflow receptacle surrounding the inner chamber, said overflow chamber capable of collecting the fluid injected into said inner chamber and overflowing the open upper end of the inner chamber, said overflow receptacle has a height which is less than the height of the inner chamber;

means for removing the fluid from the overflow receptacle, said means for withdrawing passes through the outer jacket; and

means for circulating the fluid through the central chamber and the overflow receptacle.

4,469,545

HEATING APPARATUS FOR THERMALLY BONDING PLASTIC FOILS AND METHOD FOR THE OPERATION THEREOF

Martin Löw, Löhningen, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Sep. 13, 1983, Ser. No. 531,671

Claims priority, application Switzerland, Sep. 16, 1982, 5490/82

Int. Cl.³ H05B *1/02*

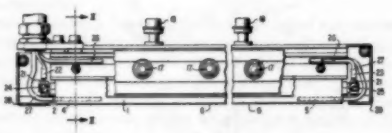
U.S. Cl. 156—359 **8 Claims**

1. Heating apparatus for thermally bonding thermoplastic foil layers to produce a longitudinal welded seam, comprising

an elongated jaw element having a work surface for receiving said thermoplastic foil layers;

at least two heating elements located within said jaw element, each of said heating elements being positioned and dimensioned to heat individually a given portion of said work surface to a desired temperature which is sufficient to securely bond said foil layers;

at least one temperature sensor associated with each of said heating elements and located within said jaw element, each of said temperature sensors generating an electrical signal proportional to the temperature of said work surface;



a control device for each of said heating elements, each of said control devices being coupled to one of said heating elements and its associated temperature sensor, said control device controlling the current through its associated heating element to maintain a constant temperature at the given portion of said work surface; and

a regulating device coupled to said temperature sensors and control devices, said regulating device selectively operating said control devices to switch from one of said heating elements to the other in accordance with the temperature detected by said temperature sensors.

4,469,546

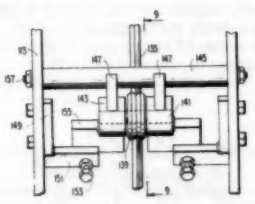
TRANSFER RING FOR A TIRE BUILDING MACHINE

Karl W. Klose, Findlay, Ohio, assignor to Cooper Tire & Rubber Company, Findlay, Ohio

Division of Ser. No. 331,263, Dec. 16, 1981, Pat. No. 4,402,782. This application Mar. 29, 1983, Ser. No. 479,933

Int. Cl.³ B29H *17/02*

U.S. Cl. 156—406.2 **7 Claims**

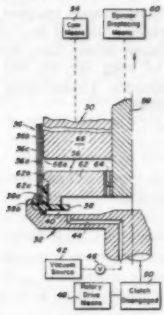


1. A tire building machine having an expansible and contractable transfer ring for conveying a belt-tread stock assembly from a building drum to a final stage assembly spaced apart from said drum, said transfer ring comprising a cradle having a pair of spaced annular side members mounted thereon, a cam ring positioned intermediate said annular side members, a plurality of cam ring supporting rollers carried by said side members in circumferential spaced relation to one another, each of said rollers mounted on a shaft carried by suitable bosses, arms connected to said bosses and to a sleeve mounted between and carried by said annular side members, said side members having brackets affixed to their inner faces with said brackets having inwardly projecting segments, a set screw carried by the inner ends of said segments and engagable with a plate member mounted on said bosses for adjustably positioning said rollers with respect to said cam ring to facilitate the positioning of said cam ring within said annular side members.

4,469,547
SPIN-BONDING APPARATUS INCLUDING AN AXIALLY DISPLACEABLE SPINNER MEMBER

Gerald L. Mitchell, Creve Coeur; Stephen E. Woerz, Florissant, and Thomas J. Setty, Manchester, all of Mo., assignors to Boise Cascade Corporation, Boise, Id.

Filed Jan. 13, 1984, Ser. No. 570,644
Int. Cl.³ B29C 27/08; B65B 7/28
U.S. Cl. 156—423 14 Claims



1. Apparatus for spin bonding to one end of a tubular composite container body wall having a synthetic plastic liner layer a synthetic plastic end closure member having annular concentrically spaced inner sealing fin and outer flange portions comprising

(a) non-rotatable mandrel means for supporting the body wall in a stationary condition in which one end of said body wall projects a given distance beyond one end of said stationary mandrel means;

(b) rotary spindle means arranged coaxially of said non-rotatable mandrel means for supporting said end closure member with the sealing fin and outer flange portions thereof extending toward said non-rotatable mandrel means;

(c) means for relatively axially displacing said mandrel and said spindle means between adjacent first and axially spaced second conditions, respectively;

(d) rotary spinner means connected with said one end of said non-rotatable mandrel means for free rotation about the longitudinal axis thereof, said spinner means also being connected for axial displacement between retracted and axially extended positions relative to said non-rotatable mandrel means;

(e) means for axially displacing said spinner means between its extended and retracted positions, respectively, said spinner means being in engagement with the end closure member when said spinner means is in the extended position and said mandrel and spindle means are in the axially spaced condition, said spinner means having a cylindrical outer surface for supporting the inner peripheral surface of the sealing fin;

(f) drive means operable when the mandrel and spindle means are in the axially spaced condition and the spinner means is in the extended position for driving said spindle mandrel means and said spinner means to a given rotational velocity; and

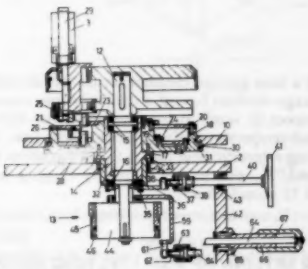
(g) means for disengaging said drive means from said rotary spindle means, thereby to permit free rotation of said rotary spindle means and said spinner means;

(h) said spinner displacing means being operable to displace said spinner means from the extended position to the retracted position as the mandrel and spindle means are relatively displaced from the axially spaced condition to the adjacent condition, respectively, thereby to support the sealing fin when the projecting extremity of the container body wall is axially introduced into the annular space between the sealing fin and the annular flange, and to spin bond the sealing fin to the container body wall inner liner layer.

4,469,548
LABELLING STATION OF A LABELLING MACHINE

Norbert Jörss, Neutraubling, Fed. Rep. of Germany, assignor to Pirzer Co., Neutraubling, Fed. Rep. of Germany

Filed Dec. 3, 1982, Ser. No. 446,664
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3150089
Int. Cl.³ B65C 9/02, 9/16
U.S. Cl. 156—567 12 Claims



1. A labelling machine having a labelling station and a main drive for moving containers in succession past said labelling station so that labels may be applied to said containers,

said labelling station including label transfer means rotatably mounted about a first axis, label supply means, and label gripping means rotatably mounted about a second axis,

said label transfer means being constructed and arranged to remove labels sequentially from said label supply means and transfer the same to said label gripping means,

drive means for rotating said label transfer means and said gripper means in synchronism with each other and the drive means for the labelling machine whereby labels received by the label gripping means will be deposited on containers moving successively past said labelling station,

said drive means including a driven part coupled to said main drive and a driving part coupled to said label transfer means for rotating the label transfer means in synchronism with the main drive,

the improvement comprising means for adjusting the rotational angle of said driving part relative to said driven part so that the rotational angle of said label transfer means relative to said label gripping means will be modified and the angular position of the label gripping means when it receives a label from said label transfer means relative to the position of each container is likewise adjusted so that the position at which the label is applied to the container can be controlled.

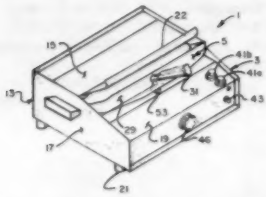
4,469,549
HEAT SEAL APPARATUS

Darrel R. Dietrich, Shawnee County, Kans., assignor to Cavalier Products, Inc., St. Louis, Mo.

Filed Dec. 13, 1983, Ser. No. 560,985
Int. Cl.³ B30B 3/00; B32B 31/20
U.S. Cl. 156—579 6 Claims

1. Heat seal apparatus for heat sealing synthetic resin film, said apparatus comprising stationary heater means having a heater therein and a heat seal roller means including a manually graspable handle and a heat seal roller rotatably mounted with respect to said handle, said heat seal roller means being insertable at least in part into said heater means so that said heat seal roller is in heat transfer relation with said heater thereby to heat said heat seal roller to a predetermined temperature level

suitable for heat sealing said film when brought into contact therewith, said heat seal roller means being withdrawable from said heater means so that a user manually grasping said handle may readily roll said heated heat seal roller over said film thereby to heat seal said film, said heat seal roll comprising a hollow cylindric tube of relatively high heat conductivity



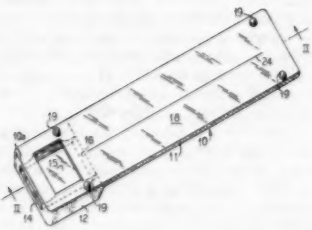
material and a heat storage medium sealed within said tube, said heat storage medium having a relatively low vapor pressure with respect to water at temperatures at or above said predetermined temperature of said roller, said heat storage medium having a specific heat ranging between about 0.3 and 0.8 Btu/pound/°F., and having a density ranging between about 50 and 75 pounds/foot^3.

4,469,550

TOOL FOR SETTING UP AND APPLYING PRESSURE SENSITIVE GRAPHIC MATERIALS

Rema L. O'Steen, Jr., P.O. Box 328, Douglas, Ga. 31533

Filed Sep. 29, 1982, Ser. No. 427,939
Int. Cl.^{3} B32B *31/00*
U.S. Cl. 156—584 **5 Claims**



1. A tool to aid in applying a film, one side of the film being coated with a pressure sensitive adhesive and protected, initially, by a removable backing, in overlying adhering relationship to a display surface, comprising:

(a) a guide element having an aperture and a through passageway with forward and rearward branches which extend generally laterally in opposite directions from the aperture and which communicate therewith, the aperture being adapted to receive a section of the film which has been stripped of its backing and the forward branch being adapted to receive a section of the backing which has been separated from the film;

(b) a support member which extends generally laterally from an outer edge of the aperture and which overhangs an entrance to the rearward branch, the entrance being distal from said outer edge of the aperture, the support member having a transparent region projecting beyond at least one wall of the rearward branch a distance substantially greater than the length of the through passageway, so that a leading portion of the side of said film lacking adhesive coating can be guided onto said transparent region with the side of said portion which is coated with the adhesive being directed away from said region; and

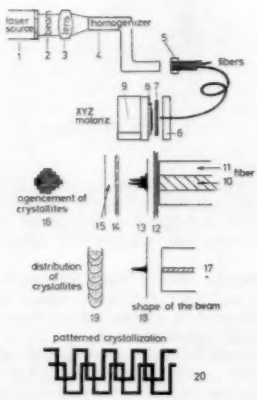
(c) means connected to the support member for holding the adhesive coated side of said portion out of contact with the display surface when the film, clinging to said region because of an electrostatic charge spontaneously generated on the film when its backing is removed, is interposed between said region and the display surface, so that premature contact therewith is prevented and the film can be prepositioned with respect to the display surface.

4,469,551

METHOD FOR CRYSTALLIZING FILMS

Lucien D. Laude, Hautmont, France, assignor to L'Etat Belge, représenté par le Secrétaire Général des Services de la Programmation de la Politique Scientifique, Brussels, Belgium

Filed Sep. 16, 1981, Ser. No. 302,753
Claims priority, application Luxembourg, Sep. 18, 1980, 82779; Aug. 10, 1981, 83540
Int. Cl.^{3} C30B *1/04*
U.S. Cl. 156—603 **31 Claims**



1. Method for crystallizing films selected from the group comprising the amorphous elementary semiconducting films and the polymetallic films comprised of two elements belonging respectively to Groups III and V, Groups II and VI of the Periodic Table, which comprises irradiating the film surface with a laser beam guided by an assembly from optic fibers which are arranged in parallel relationship with one another, each fiber having a diameter which is not larger than 50μ, said irradiating causing crystallizing into crystallites which are regularly distributed and closely confined.

4,469,552

PROCESS AND APPARATUS FOR GROWING A CRYSTAL RIBBON

Jay W. Thornhill, Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 23, 1982, Ser. No. 371,351
Int. Cl.^{3} C30B *15/34;* C01B *33/02*
U.S. Cl. 156—608 **8 Claims**

1. An apparatus for growing a crystalline ribbon of silicon from molten silicon, said ribbon substantially having the cross-section of a relatively wide and thin rectangle, the apparatus comprising:

a heatable container adapted to holding said molten silicon, said molten silicon having an upper surface level which is within a predetermined range in the container;

a pair of edge defining members fixedly positioned and stationarily mounted relative to the container, each member being partially submerged in the molten silicon and having a portion which protrudes from the molten silicon

above the upper surface level, the two members being of a material compatible with molten silicon and wettable thereby and breaking the upper surface level of the molten silicon at two spaced apart locations;

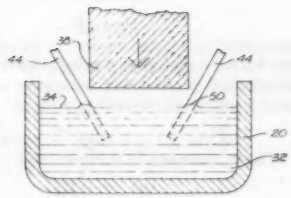
said edge defining members being filaments fixedly mounted relative to the heatable container at points disposed above the upper level of the molten silicon, said filaments being substantially straight and disposed at an angle other than 90 degrees relative to the upper level of molten silicon in the container so that the distance between the filaments increases with increasing distance upwards from the upper level of the molten silicon in the container; and

a means for contacting a silicon seed crystal of a width corresponding to the distance between the edge defining members at the upper surface level with the molten silicon between the members and for gradually pulling the seed crystal away from the molten silicon in a direction substantially normal to the upper surface level whereby a crystalline silicon ribbon of indefinite length is grown.

4. A process for producing a crystalline ribbon of indefinite length and of a substantially rectangular cross-section from a melt of silicon, said process comprising the steps of:

maintaining a melt of silicon in a heatable container;

maintaining a pair of edge defining members in a fixed position relative to the container and in a spatial relationship



wherein each edge defining member is partially submerged in the melt and partially protrudes therefrom, the edge defining members being of a material which is wettable by molten silicon and breaking the upper surface of the molten silicon at two fixed spaced apart locations;

said edge defining members being filaments fixedly mounted relative to the heatable container at points disposed above the upper level of molten material, said filaments being substantially straight and disposed at an angle other than 90 degrees relative to the upper level of molten silicon in the container so that the distance between the filaments increases with increasing distance upwards from the upper level of the molten silicon in the container; and

contacting a silicon seed crystal ribbon with the upper surface of the molten silicon between the edge defining members so that respective lateral edges of the seed crystal ribbon also contact the respective edge defining members at the two spaced apart locations, whereby a meniscus of molten silicon in formed under the seed crystal ribbon, and between the edge defining members, and

pulling the seed crystal ribbon away from the upper surface of the melt in a direction substantially normal to the melt, whereby the crystalline silicon ribbon of substantially the same cross-section as the seed crystal is grown from the melt.

4,469,553

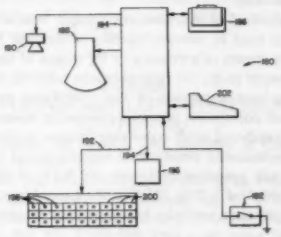
SYSTEM FOR MANUFACTURING, CHANGING, REPAIRING, AND TESTING PRINTED CIRCUIT BOARDS

Robert E. Whitehead, Irving, Tex., assignor to Electronic Packaging Co., Dallas, Tex.

Filed Jun. 27, 1983, Ser. No. 508,349

Int. Cl.³ G01R *15/12;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—627 **56 Claims**



46. A method of modifying the etched face of a circuit board comprising:

determining one or more modifications desired to be made to said etched face of said circuit board;

generating a plurality of images each corresponding to one of said desired modifications; and

projecting said images to a location and in an orientation relative to said circuit board such that said images visually indicate the precise location and type of modification desired to be made to said circuit board.

4,469,554

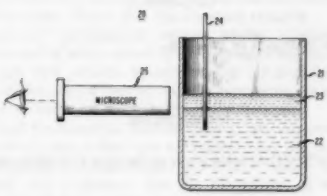
ETCH PROCEDURE FOR OPTICAL FIBERS

Dennis R. Turner, Chatham Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 5, 1983, Ser. No. 482,213

Int. Cl.³ C03C *25/06;* **C09K** *13/02, 13/06*

U.S. Cl. 156—657 **10 Claims**



1. Process comprising at least partially immersing a cylindrically symmetric body in first liquid in order to etch the cylindrically symmetric body characterized in that a second liquid is located on top of the first liquid, said second liquid being substantially non-etching and substantially immiscible in the first liquid and the cylindrically symmetric body is a glass optical fiber consisting of at least 80 weight percent silicon dioxide.

4,469,555

ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

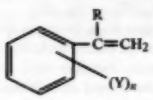
Division of Ser. No. 161,805, Jun. 23, 1980, , which is a division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Dec. 30, 1981, Ser. No. 335,787

Int. Cl.³ D21H *3/82*

U.S. Cl. 162—162 **21 Claims**

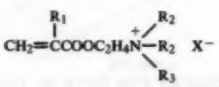
1. In the method of manufacturing paper wherein an opacifying agent is used to provide opacity in the final paper product, either by means of a coating or by means of internal addition to the paper pulp, the improvement wherein there is employed as at least a portion of the opacifying agent water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



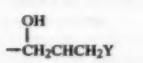
wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole per cent to 100 mole per cent of at least one cationic monomer selected from the group consisting of

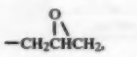


(I)

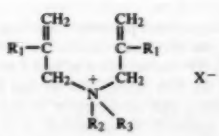
wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a C_1–C_4 alkyl, R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,

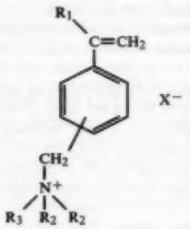


and $-CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion,



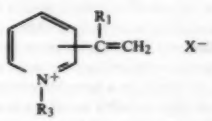
(II)

wherein R_1 is hydrogen or a C_1–C_4 alkyl, R_2 is hydrogen, alkyl or substituted alkyl, and R_3 and X^- are as defined in forumula (I),



(III)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I),

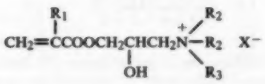


(IV)

wherein R_1, R_3 and X^- are as defined in formula (I),

(V)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and n is an integer 1, 2 or 3 and



(VI)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and

(ii) from about 95 mole per cent to 0 mole per cent of at least one ethylenically unsaturated nonionic monomer selected from the group consisting of N-vinyl pyrrolidone, ethylenically unsaturated monomers having amide functionality, and ethylenically unsaturated monomers having hydroxyl functionality,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed, said prepolymer moiety of the particles having chemically bonded thereto a cellulose reactive group.

4,469,556

FLOW DISTRIBUTOR

Charles L. Sanford, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 29, 1982, Ser. No. 426,612

Int. Cl.³ D21D *5/02*

U.S. Cl. 162—380 **9 Claims**

6. A mechanism for distributing the flow of stock over a laterally extended area to a stock filter having an elongate broad filter area for supplying the stock to a papermaking machine, comprising in combination:

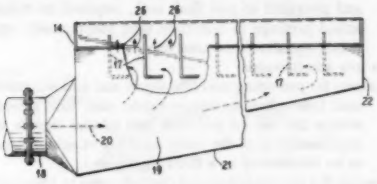
a flow distributor having a broad delivery channel for feeding stock to the broad filter area and having a broad main flow channel in communication with said delivery channel with a receiving passage leading to said main flow channel;

a plurality of baffles defining distributing paths therebe-

tween being in said main flow channel turning the flow in a direction opposite to the flow direction in the receiving passage; and

said baffles having a main wall portion extending transverse to the flow in said distributor main flow channel and having an entry wall portion at right angles to the main wall portion.

8. A mechanism for processing paper stock to be supplied to a papermaking machine, comprising in combination:



a stock filter having an elongate filter area with a receiving vat for receiving a flow of distributed stock;

a flow distributor having a broad delivery channel connected to feed stock to said vat and having a broad main flow channel in communication with the delivery channel which is tapered in the direction of flow and is provided with an inlet at the widest end; and

a plurality of L-shaped baffles within the distributor channel with a short leg extending in the direction of flow and limiting the flow entry to the space between the baffles.

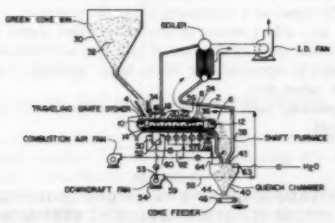
4,469,557
PROCESS FOR CALCINING AND CARBONIZING PETROLEUM COKE

Chris V. Schweer, Brentwood, and Jimmy B. Smith, Columbia, both of Tenn., assignors to Peabody Development Company, St. Louis, Mo.

Filed Feb. 17, 1983, Ser. No. 467,393

Int. Cl.³ C10B *39/06, 41/00, 49/06, 57/02*

U.S. Cl. 201—17 **1 Claim**



1. A process for calcining and carbonizing coke in a furnace having an enclosed furnace atmosphere and input and output laterally spaced ends, which comprises;

partly coking green carbonizable starting material by transporting a bed thereof horizontally in static bed form from the input to the output end of the furnace;

completing the coking of the material in a shaft furnace;

water-quenching the completely coked material while producing steam by-product;

wherein the furnace has a series of airbox zones beneath the bed extending serially from adjacent the input end to adjacent the output end thereof, including a minority of said airbox zones adjacent the input end of the furnace and a majority of said airbox zones remote from the input end;

feeding air in controlled amounts to said majority of airbox zones;

driving off moisture and low temperature volatiles from the green starting material by downdrafting a stream of hot gases from the furnace atmosphere through the starting material passing above the minority of airbox zones with a fan and fan-forcing the stream of downdrafted gases back into the furnace atmosphere wherein said stream passes through the starting material thence directly into and through said minority of airbox zones, thence directly into and through said fan, and thence directly into said furnace's atmosphere;

and cooling and rendering less spontaneously combustible the downdrafted gases by injecting steam by-product of the water-quenching into the stream of downdrafted gases downstream of the airbox zones with respect to stream flow and upstream of the fan.

4,469,558
APPARATUS FOR DISTILLING VINYLAROMATIC COMPOUNDS

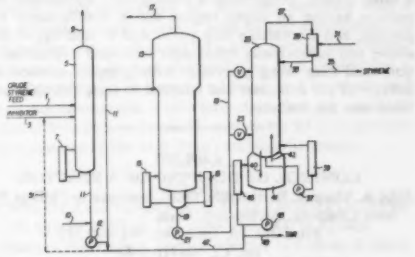
James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 071,379, Aug. 30, 1979, Pat. No. 4,272,344, which is a division of Ser. No. 925,818, Jul. 18, 1978, Pat. No. 4,252,615, which is a continuation-in-part of Ser. No. 771,438, Feb. 24, 1977, Pat. No. 4,105,506. This application Jan. 8, 1981, Ser. No. 223,471

The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.

Int. Cl.³ B01D *3/34;* **C07C** *7/05, 7/20*

U.S. Cl. 202—154 **5 Claims**



1. Apparatus for the distillation of a readily polymerizable vinyl aromatic compound employing a polymerization inhibitor comprising:

a. a first fractionation column having reboiler means connected thereto for maintaining the bottoms of said column at a proper temperature, feed lines for introducting a vinyl aromatic compound into said column, and product lines for recovering an overhead product and a bottoms fraction therefrom;

b. means for introducing said polymerization inhibitor into the bottoms of said first fractionation column;

c. a second fractionation column having reboiler means connected thereto, a feed line for transporting the bottoms of said first column to said second column for further distillation, and a product line for recovering an overhead product and a bottoms fraction;

d. a third fractionation column having reboiler means connected thereto, a feed line for transporting the bottoms of said second column to said third column for further distillation, and a product line for recovering an overhead product of high purity vinyl aromatic compound and a bottoms fraction;

e. a flash stripper connected to said third fractionation column for vaporizing residual vinyl aromatic compound from the bottoms fraction of said third column and recycling the vaporized vinyl aromatic compound from said bottoms of said third column back to said third column; and

f. means for recycling a portion of the bottoms of said flash stripper back to said second column.

4,469,559
CONTAINER FOR TRANSPORTING HOT COKE

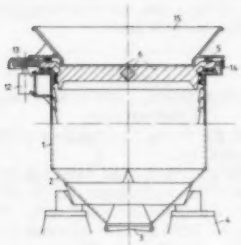
Friedrich Jokisch, Essen, and Bernhard Heinrichs, Wattenscheid, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,955

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140736

Int. Cl.³ C10B *39/02, 39/14*

U.S. Cl. 202—270 **8 Claims**



1. A container for transporting hot coke in a dry cooling process in which coke is to be transported from a coke oven to a coke cooler, comprising a substantially cylindrical upper portion having an upper region and a frustoconical lower portion; and a rotatable ring positioned in said upper region above and substantially coincident with said cylindrical portion, said ring being provided with grippers located in an interior of the container and adapted to seize the coke as it is filled into the container.

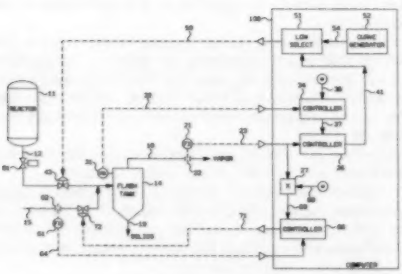
4,469,560
CONTROL OF DUMPING OF A REACTOR

John A. Morgan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 20, 1982, Ser. No. 400,187

Int. Cl.³ B01D *3/42*

U.S. Cl. 203—2 **8 Claims**



1. Apparatus comprising:

a reactor;

a flash tank;

a dump line for withdrawing the reaction effluent from said reactor and for providing the thus withdrawn reaction effluent to said flash tank;

a dump valve operably located in said dump line;

a control valve operably located in said dump line, wherein said reaction effluent flows through said dump valve prior to flowing through said control valve;

means for establishing a first signal representative of the desired opening of said control valve at any time during which said reaction effluent is being dumped from said reactor to said flash tank, wherein the magnitude of said first signal varies as a function of time and wherein the rate at which the magnitude of said first signal varies allows said reaction effluent to be withdrawn at a substantially maximum rate from said reactor without causing flashing across said dump valve;

means for establishing a second signal representative of the opening of said control valve, at any time during which said reaction effluent is being withdrawn from said reactor and provided to said flash tank, required to maintain the actual pressure in said flash tank substantially equal to a maximum allowable pressure;

a low select means;

means for providing said first signal and said second signal to said low select means, wherein said low select means selects the one of said first and second signals which is representative of the lesser opening of said control valve to be established as a third signal; and

means for manipulating said control valve in response to said third signal.

5. A method for controlling the rate at which reaction effluent is withdrawn from a reactor and provided through a dump line to a flash tank, wherein a dump valve and a control valve are operably located in said dump line and wherein the reaction effluent flows through said dump valve before flowing through said control valve, said method comprising the steps of:

using computing means to establish a first signal representative of the desired opening of said control valve at any time during which said reaction effluent is being dumped from said reactor to said flash tank, wherein the magnitude of said first signal varies as a function of time and wherein the rate at which the magnitude of said first signal varies allows said reaction effluent to be withdrawn at a substantially maximum rate from said reactor without causing flashing across said dump valve;

using computing means to establish a second signal representative of the opening of said control valve, at any time during which said reaction effluent is being withdrawn from said reactor and provided to said flash tank, required to maintain the actual pressure in said flash tank substantially equal to a maximum allowable pressure;

using low select means to establish a third signal which is representative of the one of said first and second signals which is representative of the lesser opening of said control valve; and

manipulating said control valve in response to said third signal.

4,469,561
AZEOTROPIC RECOVERY OF BPA AND PHENOL FROM AQUEOUS EFFLUENT STREAMS

Subhas K. Sikdar, Clifton Park, and Viney P. Aneja, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 279,373, Jul. 1, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,382

Int. Cl.³ E01D *3/34, 3/36*

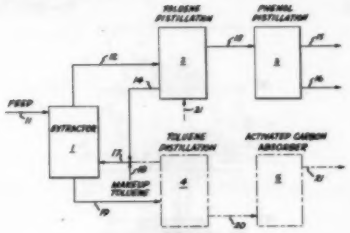
U.S. Cl. 203—39 **6 Claims**

1. A continuous process for extracting and recovering BPA and phenol from an aqueous effluent stream which after treatment can be disposed of in an environmentally safe manner which initially consists essentially of an aqueous solution or suspension having up to 10% by weight of BPA and up to 5% by weight of phenol which is generated during the manufacture of BPA as a result of the washing of BPA adduct having at least 1 mole of phenol per mole of BPA, which comprises,

(1) countercurrently extracting the aqueous effluent stream in an extraction vessel with toluene,

(2) removing the resulting heavier aqueous phase from the bottom of the extraction vessel, while directing the upper toluene phase to a toluene distillation column,

(3) distilling the toluene phase to produce a phenol and BPA bottoms product, while recycling the distilled toluene to the extraction vessel of (1),
(4) directing the BPA and phenol bottoms product to a phenol distillation column,
(5) recovering phenol as a condensed vapor and BPA as a bottoms product,



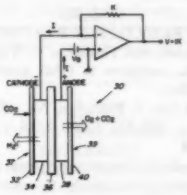
(6) directing the aqueous phase of (2) to a distillation column to effect the separation and recovery of trace amounts of toluene from the aqueous phase and
(7) passing the resulting aqueous phase from (6) through an activated carbon adsorber or an organic resin prior to disposal.

4,469,562

CARBON DIOXIDE SENSOR

Kuo-Wei Chang, 32 Buckman Dr., Lexington, Mass. 02173

Filed Dec. 29, 1982, Ser. No. 454,421
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T **10 Claims**



1. A method for measuring carbon dioxide which includes:
placing a first diffusion membrane in communication with a fluid medium, the medium containing the carbon dioxide to be measured;
flowing the carbon dioxide through the first diffusion membrane the diffusion membrane permeation selective for carbon dioxide;
hydrating said carbon dioxide to form anions and cations;
flowing the anions through an anion exchange membrane;
reforming the carbon dioxide at the anode;
creating an electrolyte flow path between the anode and the cathode and through the electrolyte; and
measuring the current between the anode and the cathode to determine the level of selected species in the gaseous stream.

4,469,563

PROCESS FOR TREATING HIGH-DENSITY INFORMATION DISC RECORDING SUBSTRATES

David F. Hakala, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1983, Ser. No. 525,477
Int. Cl.³ C25D *1/10, 5/34*
U.S. Cl. 204—5 **6 Claims**

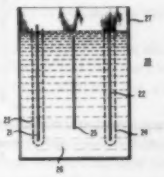
1. In a method for treating a copper recording substrate which comprises immersing said substrate in an aqueous solution of about 5–30 grams per liter of an alkaline cleaner and from about 2.5–20 grams per liter of an oxidizing agent, said mixture being maintained at between about 35°–85° C., for an immersion time between about 5–30 minutes, the improvement which comprises removing the copper oxide layer formed thereby by immersing in an ammonium chloride aqueous solution.

4,469,564

COPPER ELECTROPLATING PROCESS

Yutaka Okinaka, Madison; Craig G. Smith, North Plainfield, and Lawrence E. Smith, Plainfield, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 11, 1982, Ser. No. 407,151
Int. Cl.³ C25D *3/38, 7/00*
U.S. Cl. 204—15 **26 Claims**



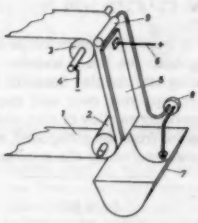
1. A process for electroplating copper onto a circuit board, said circuit board comprising an insulating substrate with a surface at least partially covered with copper comprising the step of passing current through an anode, copper electroplating bath and cathode, said electroplating bath comprising a source of copper and an organic additive, and in which said anode is nonconsumable characterized in that the anode is surrounded by a cation-permeable membrane so as to prevent organic additives in the bath from reaching the anode.

4,469,565

PROCESS OF CONTINUOUSLY ELECTRODEPOSITING ON STRIP METAL ON ONE OR BOTH SIDES

Josef Hampel, Breitenfurt, Austria, assignor to Andritz-Ruthner Industrieanlagen Aktiengesellschaft, Vienna, Austria

Filed Aug. 4, 1983, Ser. No. 520,328
Claims priority, application Austria, Aug. 5, 1982, 3014/82; Jul. 4, 1983, 2438/83
Int. Cl.³ C25D *5/02, 5/08*
U.S. Cl. 204—15 **11 Claims**



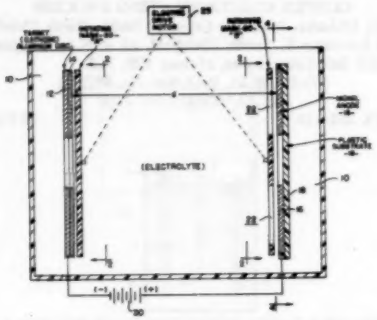
1. A process of continuously electrodepositing a metal layer on at least one side of a strip metal which is moved while it is maintained in a non-horizontal orientation, comprising the steps of causing an electrolyte to flow between at least one platelike anode and the strip metal, which constitutes a cathode, permitting the electrode to enter freely adjacent to the upper portion of said anode to flow downwardly by gravity so that the electrolyte constitutes a coherent body of flowing liquid in the space between the anode and the strip metal and in contact with said strip metal, and continuously supplying additional electrolyte to said space to maintain said space filled with electrolyte.

4,469,566

METHOD AND APPARATUS FOR PRODUCING ELECTROPLATED MAGNETIC MEMORY DISK, AND THE LIKE

Daniel X. Wray, Canoga Park, Calif., assignor to Dynamic Disk, Inc., Chatsworth, Calif.

Filed Aug. 29, 1983, Ser. No. 527,349
Int. Cl.³ C25D 5/00
U.S. Cl. 204—23 11 Claims



1. Apparatus for depositing a layer of magnetic material on a substrate, including: a container for an electrolyte; a target mounted in said container comprising a member having an electrically conductive surface on which the layer of magnetic material is to be deposited; an anode mounted in said container in spaced and parallel relationship with said target; means for introducing a direct current voltage across said anode and target; at least one apertured mask rotatably mounted in said container between said anode and said target to provide a controlled current density across the surface of the target as the mask rotates; and means mechanically coupled to the mask for rotatably driving the mask.

4,469,567

TREATMENT OF COPPER FOIL

John Torday, Newcastle upon Tyne, and James McGilly, Whitley Bay, both of England, assignors to Torday & Carlisle Public Limited Company, North Shields, England

Filed Dec. 1, 1983, Ser. No. 556,785
Claims priority, application United Kingdom, Dec. 1, 1982, 8234297
Int. Cl.³ C25D 5/10, 7/06, 11/38
U.S. Cl. 204—27 10 Claims

1. A method of treating copper foil including the steps of electrodepositing onto the foil a nodular, dendritic layer of metal, encapsulating said nodular, dendritic layer of metal with a layer of copper, applying over said encapsulating layer a barrier layer comprising an alloy of zinc, nickel and at least one of the metals selected from the group lead, selenium, tellurium, tin and arsenic, and passivating the resultant structure.

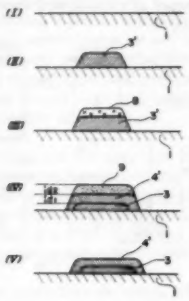
4,469,568

METHOD FOR MAKING THIN-FILM TRANSISTORS

Hiroaki Kato, Tenri; Kohhei Kishi, and Yutaka Takafuji, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Japan Electronic Industry Development Association, Tokyo, both of, Japan

Filed Dec. 1, 1982, Ser. No. 446,046
Claims priority, application Japan, Dec. 10, 1981, 56-199894
Int. Cl.³ C25D 5/44; H01L 49/02
U.S. Cl. 204—35.1 1 Claim

1. A method for making a thin-film transistor which comprises the steps of forming a first metal layer of Ta, which ultimately becomes a gate electrode, on an insulative substrate, forming a second metal layer of Nb on said first metal layer, simultaneously oxidizing said first and second metal layers by the use of an anodization technique to form first and second oxide layers of Ta_2O_5 and Nb_2O_5, respectively, said first oxide layer being formed on said first layer of Ta and said second



oxide layer being formed on said first oxide layer, and effecting a selective etching to remove only the second oxide layer of Nb_2O_5, thereby leaving the first oxide layer of Ta_2O_5 to form the gate insulating layer for the Ta gate electrode.

4,469,569

CYANIDE-FREE COPPER PLATING PROCESS

Lillie C. Tomaszewski, and Thaddeus W. Tomaszewski, both of Dearborn, Mich., assignors to OMI International Corporation, Warren, Mich.

Filed Jan. 3, 1983, Ser. No. 455,353
Int. Cl.³ C25D 3/38
U.S. Cl. 204—52 R 32 Claims

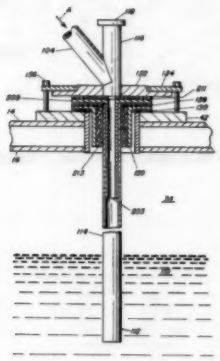
1. A process for electrodepositing a grain refined ductile and adherent copper strike on a conductive substrate which comprises the steps of providing an aqueous alkaline cyanide-free electrolyte containing copper ions in an amount sufficient to electrodeposit copper, a complexing agent in an amount sufficient to chelate the copper ions present, said complexing agent comprising a compound selected from the group consisting of 1-hydroxyethylidene-1,1-disphosphonic acid, a mixture of 1-hydroxyethylidene-1,1-disphosphonic acid and aminotri-(methylene phosphonic acid) in which said 1-hydroxyethylidene-1,1-diphosphonic acid is present in an amount of at least about 50 percent by weight of the mixture; and a mixture of 1-hydroxyethylidene-1,1-diphosphonic acid and ethylene diamine tetro (methylene phosphonic acid) in which said 1-hydroxyethylidene-1,1-diphosphonic acid is present in an amount of at least about 30 percent by weight of the mixture, as well as the bath soluble and compatible salts and partial salts thereof, a bath soluble and compatible carbonate compound in an amount sufficient to stabilize the pH of the electrolyte, and hydroxyl ions in an amount to provide a pH of about 7.5 to about 10.5, controlling the temperature of said electrolyte between about 100° to about 160° F., immersing a conductive substrate to be plated as a cathode in said electrolyte, immersing a combination of a copper-base soluble anode and a ferrite insoluble anode in said electrolyte to provide a copper anode to ferrite anode surface area ratio of about 1:2 to about 1:6, and passing current between said anodes and said cathode for a period of time sufficient to deposit copper on said substrate to the desired thickness.

4,469,570

USE OF A REINFORCED CERAMIC TUBE IN THE ELECTROLYTIC PRODUCTION OF METALS

Laurence W. Hays, Badin, N.C., and H. Wayne Cotten, Palestine, Tex., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 6, 1981, Ser. No. 318,875
Int. Cl.[3] C25C 3/00, 3/06, 7/00
U.S. Cl. 204—67 9 Claims



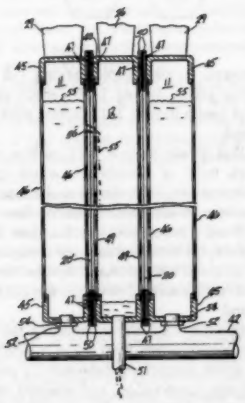
1. A method of using a ceramic tube having two ends and a metal liner within the tube and closer to one end of the tube than the other, comprising feeding a material through the tube and liner, the direction of material flow being from the liner-close end to the liner-distant end, wherein the tube extends into a molten bath electrolysis cell having a lid and a chamber beneath the lid, with said material flowing into the cell, the liner-distant end being submerged in molten bath within the cell, the tube extending from its liner-distant end, through the chamber, to the lid.

4,469,571

REPLACEMENT OF A STRUCTURALLY DAMAGED MEMBRANE

David L. Fair, Chattanooga; Kenneth E. Woodard, Jr., and Robert A. Dean, both of Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 1, 1983, Ser. No. 519,356
Int. Cl.[3] C25B 1/08, 1/46; B22D 19/10
U.S. Cl. 204—98 21 Claims



1. A method of replacing a structurally damaged membrane in a filter press membrane electrolytic cell containing electrolyte having an anode bus, a cathode bus, an anolyte infeed manifold, a catholyte infeed manifold, a deionized water infeed, a brine infeed, a product caustic outlet, a product chlorine outlet, and a plurality of anodic and cathodic electrodes, each pair of anodes and cathodes being sandwiched about a membrane, comprising:

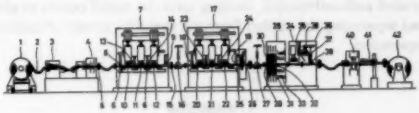
a. electrically disconnecting the electrolytic cell from the electrical power source;
b. disconnecting and sealing the brine and deionized water infeed;
c. draining the electrolyte from the electrolytic cell;
d. determining the location of the electrode adjacent the structurally damaged membrane;
e. removing the catholyte infeed manifold;
f. removing the anolyte infeed manifold;
g. removing the anode bus;
h. removing the cathode bus;
i. placing the electrolytic cell in a horizontal position to form a cell stack;
j. removing the back plate from the electrolytic cell;
k. connecting a lifting fixture to the electrode immediately above the electrode adjacent the structurally damaged membrane;
l. breaking the stack apart into two units by raising the lifting fixture connected to the electrode immediately above the electrode adjacent the structurally damaged membrane;
m. inspecting the structurally damaged membrane;
n. replacing the structurally damaged membrane;
o. reassembling the cell stack into one unit; and
p. reassembling the electrolytic cell and reconnecting the cell electrolytic and electrical connections.

4,469,572

METHOD OF CONTINUOUSLY PROCESSING A BAND-SHAPE MATERIAL

Yasuo Kimoto, Fujiidera; Masahiko Yamamoto, Nishinomiya; Katsunori Tamiya, Kobe; Yoshihito Sakai, Sakai; Akio Komura; Shoichi Honda, both of Osaka; Hidehiko Maehata, Suita; Hiroshi Kamada, Takatsuki; Tomohiko Suzaki, Ibaraki, and Tomoya Inoue, Kawasaki, all of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Japan

Filed Mar. 9, 1981, Ser. No. 241,651
Claims priority, application Japan, Mar. 12, 1980, 55-31096
Int. Cl.[3] C25F 3/16
U.S. Cl. 204—129.46 1 Claim



1. A method for continuously processing a ribbon-like material comprising:

a preliminary polishing step in which surface defects of material pulled out from an uncoiler are removed and the surface of the material is semi-finished by exposing said ribbon-like material to first, second and third combined electrolytic and polishing steps, wherein each of said combined steps includes supplying abrasive matter to the surface of circular electrodes by means of a bore hole in the center of said electrodes, supplying electrolytes to a gap separating said ribbon-like material and said circular electrodes, and pressing said ribbon-like material to said circular electrodes with a predetermined force, wherein said first, second and third polishing steps utilize first, second and third abrasives which are progressively finer;

a final polishing step in which the surface of the material is mirror finished comprising exposing said ribbon-like material to fourth, fifth and sixth combined electrolytic and

polishing steps, wherein each of said combined steps include supplying abrasive matter to the surface of a circular electrode by means of a bore hole in the center of said electrode, supplying electrolytes to a gap separating said ribbon-like material and said circular electrodes, and pressing said ribbon-like material to said electrodes with a predetermined force wherein said fourth, fifth and sixth steps utilize fourth, fifth and sixth abrasives finer than said first, second and third abrasives and which become progressively finer;

a washing and drying step in which said ribbon-like material is washed and dried to remove extraneous matter from the surface of said ribbon-like material, said washing step comprising a first step for washing coarse materials from said ribbon-like material and a second step including first, second and third showering steps for showering upper and lower sides of said ribbon-like material to clean residues therefrom, and said drying step includes an air drying step and a heat drying step;

a surface inspection step in which a finished surface of said ribbon-like material is inspected for surface roughness and defects;

a surface protection step in which a protective film is applied to the finished surface of said ribbon-like material; and

a press step in which said ribbon-like material is cut into predetermined sizes.

4,469,573

METHOD AND ARRANGEMENT FOR SEPARATING RUBBER FROM METAL

Pavel Munih, Kranj, Yugoslavia, assignor to Sava Kranj Industrija gumijevih, usnjenih in kemicnih izdelkov n.l.sol.o., Ljubljana, Yugoslavia

Continuation-in-part of Ser. No. 199,157, Oct. 21, 1980, Pat. No. 4,332,700. This application Mar. 29, 1982, Ser. No. 362,773

The portion of the term of this patent subsequent to Jun. 1, 1989, has been disclaimed.

Int. Cl.[3] **C08J** *3/28, 11/00*

U.S. Cl. 204—155 **13 Claims**

1. A method for separating rubber from metal which comprises obtaining a disintegrated metal-containing rubber body, impeding the access of oxygen to the rubber, exposing said rubber body to high-frequency electromagnetic field for a time sufficient to cause the metal to glow and the border layer of the rubber on the metal-rubber contact to become thermally degraded and carbonized, cooling until the metal ceases to glow, and separating the rubber from the metal by means of magnetic separation.

4,469,574

PROCESS AND AUTOMATED DEVICE FOR LASER-INDUCED CHEMISTRY

Philip M. Keehn, Newton, and Robert M. Serino, Tewksbury, both of Mass., assignors to Brandeis University, Waltham, Mass.

Filed May 21, 1982, Ser. No. 380,631

Int. Cl.[3] **B01J** *19/08, 19/12*

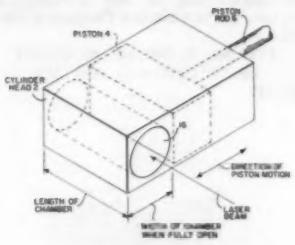
U.S. Cl. 204—159 R **17 Claims**

16. A method of promoting chemical reactions, comprising the following steps:

a. expanding the volume of a reaction chamber, which comprises a piston and a cylinder which is equipped with one or more windows, by moving said piston within said cylinder, thereby causing one or more chemicals to enter said cylinder through an inlet;

b. directing a beam of electromagnetic radiation through one or more of said windows into said cylinder, thereby irradiating said chemicals in said cyliner and causing said chemicals to react and form one or more products; and

c. reducing the volume of said reaction chamber by moving said piston within said cylinder, thereby causing said



products to be expelled from said cylinder into a receptacle.

4,469,575

PHOTOPOLYMERIZABLE COMPOSITION, PHOTOINITIATOR MIXTURE AND CURING PROCESS

Tjerk van der Hauw, Diepenveen, and Hans Jaspers, Putten, both of Netherlands, assignors to Akzona, Asheville, N.C.

Division of Ser. No. 315,799, Oct. 28, 1981, Pat. No. 4,442,022. This application Sep. 30, 1982, Ser. No. 431,524

Claims priority, application Netherlands, Nov. 5, 1980, 8006035

Int. Cl.[3] **C08F** *2/46, 2/50;* **C08J** *3/28*

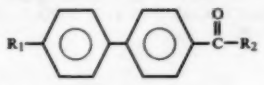
U.S. Cl. 204—159.19 **3 Claims**

1. A photopolymerizable composition comprising:

a. a polymerizable, polyethylenically unsaturated compound;

b. benzil and/or fluorenone;

c. a biphenylyl ketone of the formula:



wherein:

R_1=hydrogen, an alkyl group having 1–8 carbon atoms, an alkoxy group having 1–10 carbon atoms, an alkyl carbonyl group having 2–12 carbon atoms or a halogen atom; and

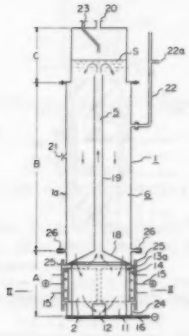
R_2=an alkyl group having 1–12 carbon atoms, phenyl, naphthyl, furyl or thiophenyl, which groups may be substituted or not, wherein the molar ratio of said biphenylyl ketone to said benzil and/or fluorenone is from 0.25 to 9 and wherein said benzil and/or fluorenone and said biphenylyl ketone combined comprise an aromatic ketone mixture, said aromatic ketone mixture comprising between 0.1 and 1.5% of the weight of said composition; and

d. a reducing agent capable of reducing the aromatic carbonyl compounds when they are in the excited state, said reducing agent comprising between 0.1 and 4.5% of the weight of said composition, and wherein the weight ratio of said aromatic ketone mixture to said reducing agent is from 1:3 to 3:1.

4,469,576
APPARATUS FOR ELECTROLYTICAL PRODUCTION OF ALKALINE CHLORATE

Toshitada Akazawa; Kohkichi Suzuki, and Toshikatu Haga, all of Koriyama, Japan, assignors to Hodogaya Chemical Company, Ltd., Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,122
Claims priority, application Japan, Apr. 17, 1981, 56-57123
Int. Cl.³ C25B 9/00
U.S. Cl. 204—237 4 Claims



1. In an apparatus for electrolytically producing alkaline chlorates from a starting solution, comprising a container of a column type forming a lower electrolysis zone having an electrode section and a feed section; an intermediate reaction zone having an elevating section and a descending section, in combination, forming a reactor; and an upper gas-separation zone, said electrode section comprising vertical cathode plates and anode plates mounted to said column and arranged alternately and spaced apart from the neighboring plates, and having a horizontal straight passage therethrough, said feed section being defined by said electrode section and the side and bottom walls of said column to form two symmetrical opposite areas outside of said electrode section, which areas are in communication with each other through said horizontal straight passage,

said elevating section being defined by a vertical tube extending axially within said column, said tube having upper and lower open ends with an enlarged lower portion of a reverse funnel form covering the top area of said electrode section, said descending section being defined by said tube and the side wall of said column to form a space extending vertically around said tube and having an inlet for introducing starting solution and an outlet for discharging solution out of said column, said descending section communicating with said feed section at the top thereof,

said upper zone being defined by the side and top walls of said column to form a space communicating with said elevating and descending sections, said upper zone having an outlet at the top wall of said column for discharging gases produced from the solution in said column, the improvement comprising in combination:

(A) said column consisting of three separate cylindrical segments corresponding to said lower zone, said intermediate zone, and said upper zone, respectively, said column segments being connected detachably by bolt-nut means at their joints, the joints between said lower and intermediate segments being electrically connected by a copper strip;

(B) said anode plates being grouped in two combinations forming a pair of combs located oppositely in such arrangement that corresponding anode plates of said opposite combs extend inwardly in opposite directions, and the inner ends of the corresponding opposite anode plates are spaced apart from each other;

(C) said cathode plates extending upwardly from the bottom wall of said column and being spaced apart from the neighboring plates without any spacers, each cathode plate having a horizontal hole defined by it and said column bottom wall, said holes forming, in combination, said horizontal straight passage across said electrode section, said anode plates having lower free ends positioned above said horizontal staight passage;

(D) said lower and intermediate column segments having substantially the same inner diameter over their axial length, said lower column segment having opposite holes open to the opposite sides of the segment wall and having opposite hollow extensions extending straight-outwardly from said corresponding sides to surround said segment holes, thereby to form opposite inlets for said anode combs to be introduced into said column therethrough;

(E) said upper column segment forming said upper gas-separation zone having a diameter smaller than that of said lower and intermediate column segments, and being detachably connected to said intermediate column segment;

(F) said tube defining said elevating section having an upper cylindrical portion allowing the solution to flow therethrough in a piston flow, while said cylindrical intermediate column segment and said upper cylindrical tube portion, in combination, define said descending section of a circumferential form which allows the solution to flow therethrough in a piston flow;

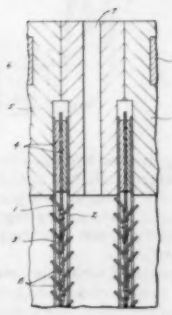
(G) said enlarged lower portion of said tube being mounted onto the opposite outermost cathode plates at the opposite upper corners thereof; and

(H) a ratio of a height of said column to the diameter of said intermediate reaction zone being not less than 2.

4,469,577
MEMBRANE ELECTROLYSIS CELL

Helmut Schmitt, Dortmund; Helmuth Schurig, Holzwickede, and Wolfgang Strewe, Dortmund, all of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed May 25, 1983, Ser. No. 498,009
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219704
Int. Cl.³ C25B 9/02, 11/03
U.S. Cl. 204—252 3 Claims



1. A filter press electrolytic cell comprising:

a pair of cooperating outer seal members having cooperating facing surfaces, the outer peripheral portions of the facing surfaces contacting one another in sealing relationship; and

an electrode pair and membrane assembly having an outer peripheral portion positioned between the inner portion of the facing surfaces of said outer seal members, said electrode pair and membrane assembly including a pair of spaced apart electrode plates having a membrane element

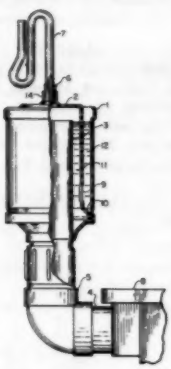
positioned therebetween, each of said electrode plates including an outer peripheral plate portion and a plurality of centrally located, spaced apart grid members integral with said outer plate portion, the outer peripheral plate portion of one of said electrode plates in sealing engagement with the inner portion of the facing surface of one of said outer seal members and the outer peripheral plate portion of the other one of said electrode plates in sealing engagement with the inner portion of the facing surface of the other one of said outer seal members, said grid members of said one of said electrode plates projecting outwardly toward said other one of said electrode plates for engagement with one side of said membrane element to urge a first portion of said membrane element toward said other one of said electrode plates, said grid members of said other one of said electrode plates staggered relative to said grid members of said one of said electrode plates and projecting outwardly toward said one of said electrode plates for engagement with the opposite side of said membrane element to urge a second portion of said membrane element toward said one of said electrode plates, and a seal means between said plate portions of said electrode plates and said membrane element, said seal means cooperating with said membrane element for establishing a predetermined spacing between said electrode plates.

4,469,578

HYDROGEN VENT ASSEMBLY

Mathew G. Sobieniak, 76 Onondaga St., Lewiston, N.Y. 14092

Filed Aug. 10, 1983, Ser. No. 521,876
Int. Cl.³ C25B 9/00
U.S. Cl. 204—279 **7 Claims**



1. An improved polymeric hydrogen vent assembly for use on chloralkali diaphragm cells, said assembly comprising:

(a) an elongated tube having an enlarged upper section with an open end and a lower section engaging the hydrogen outlet pipe of said cell, said tube being adapted to contain a liquid medium,

(b) a standpipe emplaced within the tube, the lower end of said standpipe being sealed to the lower inner surface of said tube, the upper end of said standpipe being recessed below the open end of the tube,

(c) an inverted cup emplaced within the tube enclosing the standpipe, said cup dividing the region between the standpipe and tube into an inner region and an outer region, the base of said cup being adapted to engage the lower inner surface of the tube, and the top of said cup having a manometer fitting communicating directly with the standpipe, said cup containing peripheral openings permitting fluid communication between the inner region and the outer region, and

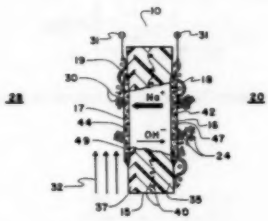
(d) a manometer sealed to the manometer fitting.

4,469,579

SOLID POLYMER ELECTROLYTES AND ELECTRODE BONDED WITH HYDROPHYLIC FLUOROCOPOLYMERS

Michael J. Covitch, Cleveland Heights; Donald L. DeRespiris, Mentor, both of Ohio; Leo L. Benezra, San Jose, Calif., and Elvin M. Vauss, Cleveland, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 277,918, Jun. 26, 1981, Pat. No. 4,421,579. This application Sep. 20, 1982, Ser. No. 419,922
Int. Cl.³ C25B 1/46, 9/04
U.S. Cl. 204—283 **2 Claims**



1. A solid polymer electrolyte electrode assembly comprising:

a perfluorocarbon copolymeric membrane comprising two zones each having functional groups with the groups differing from one zone to the other;

a hydrophylic perfluorocarbon copolymer composite anode prepared from a dispersion of conductive particulate substance and hydrophylic perfluorocarbon copolymer dispersed in solvating dispersion medium, said anode being coadhered to one membrane surface and consisting essentially of said conductive particulate substance partially coated with the hydrophylic perfluorocarbon copolymer, said copolymer having equivalent weight between about 900 and 1500; and

a hydrophylic perfluorocarbon copolymer composite cathode prepared from a dispersion of particulate electrocatalytic compound and hydrophylic perfluorocarbon copolymer dispersed in solvating dispersion medium, said cathode being coadhered to the surface of the membrane obverse from said anode, said cathode consisting essentially of said particulate electrocatalytic compound partially coated with the hydrophylic perfluorocarbon copolymer, said copolymer having equivalent weight between about 900 and 1500.

4,469,580

METHOD OF MAKING AN IMPROVED INTERNALLY SUPPORTED ELECTRODE

Gary A. Deborski, Midland, and Joseph D. Lefevre, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

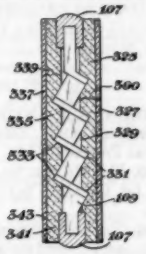
Continuation of Ser. No. 249,256, Mar. 30, 1981, abandoned. This application Aug. 16, 1982, Ser. No. 408,373
Int. Cl.³ C25B 11/03
U.S. Cl. 204—284 **10 Claims**

1. A method for making an internally supported electrode which comprises:

(a) contacting a first exposed member with a plurality of projections which extend from a first surface of a gas permeable support section;

(b) contacting a second exposed member with a plurality of projections which extend from a second surface of the gas permeable support section;

(c) imbedding at least a portion of the projections into the contacting surfaces of each of the exposed members; and



(d) bonding the imbedded projections to each of the exposed members

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4,469,581

ELECTROLYTIC ELECTRODE HAVING HIGH DURABILITY

Hiroshi Asano, Chiba; Takayuki Shimamune, Tokyo, and Hideo Nitta, Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed May 19, 1982, Ser. No. 379,699
Claims priority, application Japan, May 19, 1981, 56-74296
Int. Cl.³ C25B *11/00*
U.S. Cl. 204—290 F **8 Claims**

1. An electrolytic electrode having high durability for use in electrolysis where the generation of oxygen occurs which comprises:

(a) an electrode substrate of titanium or a titanium-based alloy;

(b) an electrode coating comprising a mixed metal oxide selected from the group consisting of IrO_2 and TiO_2; RuO_2 and TiO_2; and RuO_2 and IrO_2; and

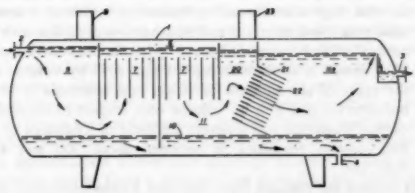
(c) an intermediate layer comprising an electrically conductive oxide of tantalum, niobium or a mixture thereof provided between the electrode substrate (a) and the electrode coating (b) in a thickness, calculated as the metal, of 0.001 to 2 g/m².

4,469,582

ELECTRICALLY ENHANCED INCLINED PLATE SEPARATOR

Kerry L. Sublette, Tulsa, and Floyd L. Prestridge, Mounds, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 22, 1982, Ser. No. 360,253
Int. Cl.³ B01D *13/02, 17/06;* B03C *5/02;* C10G *33/02*
U.S. Cl. 204—302 **12 Claims**



5. A treating system for separating a polar dispersed liquid from a non-polar continuous liquid, including;

a horizontally extended shell in which treatment of a mixture of polar and non-polar liquids takes place;

means for introducing a mixture of relatively polar liquids dispersed in a relatively non-polar liquid into one end of the shell;

a first compartment within the shell connected to receive the mixture flowed into the shell to provide residence time for a portion of the relatively polar liquid to coalesce and gravitate in separation from the relatively non-polar liquid;

means for flowing the remaining mixture of liquids into a compartment in which a plate separator is mounted and which separator has,

(a) a first parallel plate sections of electrically conductive material mounted in the array parallel to each other and inclined downwardly to the horizontal flow of liquid mixture into the compartment,

(b) a source of electrical energy connected to the electrically conductive plate sections to generate an electric field between the plate sections,

(c) second plate sections of electrically nonconductive material mechanically connected to the first plate section to form a continuous surface of each pair of conductive and nonconductive sections in order to generate an electric field between the second plate sections degrading in the direction of the mixture flowing between the plates,

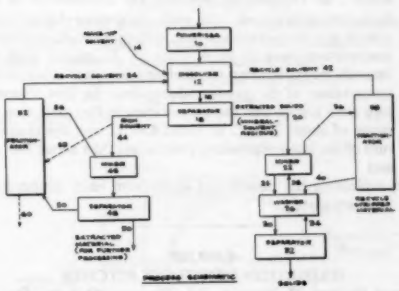
and means for providing collection of coalesced polar liquid from the plates and withdrawing the collection from the vessel.

4,469,583

EXTRACTION OF FOSSIL FUEL WITH GUANADINE EXTRACTING AGENT

George D. Case, 429 Highview Pl.; Alfred H. Stiller, 459 Lawnview Cir.; Paul J. Bekowies, 1012½ Dorsey Ave., and Anthony G. Panson, Rte. 4, Box 214B, all of Morgantown, W. Va. 26505

Continuation of Ser. No. 386,796, Jun. 8, 1982, abandoned. This application Jun. 20, 1983, Ser. No. 505,028
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—8 LE **8 Claims**



1. A process of substantially extracting the non-fixed carbon content of a fossil fuel of the group consisting of coal, oil shale, or tar sands which contains fixed carbon and non-fixed carbon therein, which comprises the steps of agitating at a temperature below the decomposition or softening temperature of said fossil fuel said fossil fuel in sub-divided form in a solvent liquid consisting essentially of

(a) a compound of the general formula:

$$(R_1)_2N-\underset{\underset{NR}{\|}}{C}-N(R_2)_2$$

where R, R_1, and R_2 are each hydrogen atoms, lower alkyl (C_1–C_4) groups or phenyl groups, which has a higher decomposition temperature than said agitation

temperature and is in the liquid state at said agitation temperature, or

(b) a mixture of at least about 5–10% of a compound within said formula which has a decomposition temperature higher than said agitation temperature and is liquid or solid at said agitation temperature and a solubilizing diluent for said compound until a substantial amount of the non-fixed carbon content of the same is dissolved in said solvent liquid, separating the undissolved solid matter of said fossil fuel including fixed carbon from said solvent liquid containing said non-fixed carbon dissolved therein, substantially recovering said solvent liquid from said non-fixed carbon content, and re-using said recovered solvent liquid for the extraction of additional fossil fuel by the steps recited above.

4,469,584

PROCESS FOR PYROLYZING OIL-SHALE

Richard P. Rhodes, Westfield; Frank Hershkowitz, Cranford, both of N.J., and William N. Olmstead, New York, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 1, 1982, Ser. No. 413,629
Int. Cl.³ C10G *1/00*; C10B *53/06, 49/04*
U.S. Cl. 208—11 R **6 Claims**

1. A process for converting solid carbonaceous material selected from the group consisting of coal and oil-shale to a discriminate range of liquid and gaseous products, which process comprises:

(a) feeding the carbonaceous material into a plug flow type reactor wherein the reactor contains two or more temperature zones with each temperature zone containing one or more stages and wherein the temperature of the carbonaceous material within each temperature zone is substantially constant;

(b) introducing an inert gas independently into each one or more stages of each temperature zone in such a manner that the gas residence time in each stage is less than about 30 seconds and the total solids residence time is from about 5 to 150 minutes, wherein the temperature of the inert gas introduced into each successive temperature zone is at a temperature which will cause each successive temperature zone to be at least 25° C. higher than the immediately preceding temperature zone and wherein the temperature of the gas introduced into the first temperature zone is such that the temperature in that zone is in the range of about 350° C. to about 450° C. and the temperature of the last temperature zone is less than about 700° C.; and

(c) collecting the liquids and gases from each temperature zone separately.

4,469,585

OXIDATION RESISTANT PITCHES

Samuel Cukier, 27 Newgate Rd., Toronto, Ontario, Canada M6B 3G5, and Henry A. F. L. Kremer, 52 Langstaff Rd. West, Thornhill, Ontario, Canada L4J 1M1

Filed May 9, 1983, Ser. No. 492,697
Int. Cl.³ C10C *1/00*; H01B *1/04*
U.S. Cl. 208—39 **8 Claims**

1. A pitch composition having resistance to oxidation, comprising:

(a) a pitch material, and

(b) an effective amount of an active component comprising at least one member selected from the group consisting essentially of alkyl-aryl sulfonic acid, and alkyl-aryl sulfonates, said member being compatible with and soluble in said pitch, said effective amount of said active component is less than 1% by weight of said pitch material, and wherein the alkyl group of said aryl sulfonic acid or aryl sulfonate is a member selected from the group consisting of branched and unbranched alkyl members having from one to four carbon atoms and the sulfonates are salts of the metals selected from the group consisting of groups I and II of the periodic table, and ammonium.

4,469,586

HEAT EXCHANGER ANTIFOULANT

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 30, 1982, Ser. No. 429,696
Int. Cl.³ C10G *9/12*
U.S. Cl. 208—48 AA **7 Claims**

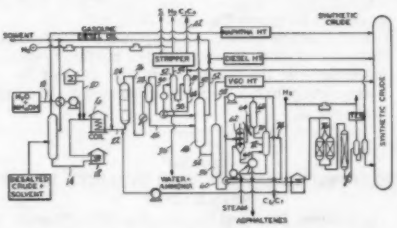
1. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of an antifouling additive is added to said hydrocarbon stream, said additive comprising a dialkyl sulfoxide wherein the alkyl group contains 1 to 6 carbon atoms.

4,469,587

PROCESS FOR THE CONVERSION OF ASPHALTENES AND RESINS IN THE PRESENCE OF STEAM, AMMONIA AND HYDROGEN

Roberto E. Galiasso Tailleur; Jose A. Salazar Guillen, both of Los Teques; Donald Huskey, Caracas; Alfredo L. Morales, and Luig G. Aquino, both of Los Teques, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Sep. 2, 1983, Ser. No. 528,808
Int. Cl.³ C10G *67/04, 69/06*
U.S. Cl. 208—61 **26 Claims**



1. A process for upgrading heavy crude feedstock containing more than 5% asphaltenes by the controlled conversion of asphaltenes and resins comprising:

(a) feeding a hydrocarbon feedstock to a first hydroconversion thermal stage wherein said hydrocarbon feedstock is treated with steam and ammonia and hydrogen so as to diminish the content of asphaltenes and resins, wherein the concentration of ammonia is about between 0.1 and 10% by volume and the ratio of the mixture of steam and ammonia is about between 0.1 and 30% by volume with respect to the hydrocarbon feedstock and wherein the ratio of hydrogen to the hydrocarbon feedstock is between about 300 and 4500 Nm^3/m^3;

(b) feeding the effluent from said first hydroconversion thermal stage to a second hydroconversion thermal stage wherein said effluent is further treated in the presence of steam and ammonia so as to further diminish the content of asphaltenes and resins; and

(c) withdrawing the treated effluent from said second hydroconversion thermal stage and passing said treated effluent to a high pressure-high temperature separator wherein said treated effluent is separated so as to produce a liquid fraction and a residual fraction.

4,469,588
IMMOBILIZATION OF VANADIA DEPOSITED ON SORBENT MATERIALS DURING VISBREAKING TREATMENT OF CARBO-METALLIC OILS

William P. Hettinger, Jr., and Hubert W. Beck, both of Russell, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 281,797, Jul. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 277,752, Mar. 19, 1981,. This application Sep. 29, 1982, Ser. No. 427,355
Int. Cl.³ C10G *25/09, 25/11, 9/32*
U.S. Cl. 208—77 17 Claims

1. A method for demetallizng and decarbonizing high boiling portions of crude oils comprising metal contaminants, and highly viscous high molecular weight hydrocarbons boiling above 1000° F. which comprises, contacting said high boiling portion of crude oil with solid sorbent particulate material provided with a metal additive material selected from one or more of Mg, Ca, Sr, Ba, Sc, Y, La, Ti, Ar, Hf, Nb, Ta, Mn, Ni, In, Te, Bi, and elements in the lanthanide or actinide series to form a compound with deposited vanadium and substantially immobilize flow of vanadium during high temperature use of said sorbent material, said sorbent providing a high pore volume in the range of 0.4 cc/g up to about 0.8 cc/g at

elevated temperature conditions above 900° F. and a contact time equal to or less than 5 sec. providing a vaporous product of thermal visbreaking, said conditions limiting production to lower boiling naphtha containing products, said contacting with such high pore volume sorbent material effected under conditions of sorbent to oil feed ratio for particularly imbibing metal contaminants and some high boiling highly viscous high molecular weight hydrocarbons of said crude oil at said visbreaking conditions, and recovering a vaporous product of said thermal visbreaking operation boiling up to about 1000° F. comprising less than about 100 ppm of nickel plus vanadium.

4,469,589
CATALYST AND PROCESS FOR CONVERSION OF HYDROCARBONS

Jin S. Yoo, Flossmoor, and John A. Jaecker, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

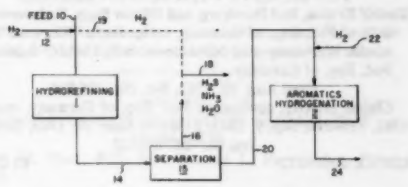
Continuation-in-part of Ser. No. 484,085, Apr. 11, 1983, abandoned, which is a division of Ser. No. 301,678, Sep. 14, 1981, abandoned, which is a continuation-in-part of Ser. No. 173,315, Jul. 29, 1980, abandoned. This application May 16, 1983, Ser. No. 494,753
Int. Cl.³ C10G *11/05;* C01B *17/60*
U.S. Cl. 208—120 53 Claims

1. In a hydrocarbon conversion process for converting a sulfur-containing hydrocarbon feedstock which comprises (1) contacting said feedstock with solid particles capable of promoting the conversion of said feedstock at hydrocarbon conversion conditions in at least one reaction zone to produce at least one hydrocarbon product and to cause deactivating sulfur-containing carbonaceous material to be formed on said solid particles thereby forming deposit-containing particles; (2) contacting said deposit-containing particles with an oxygen-containing vaporous medium at conditions to combust at least a portion of said carbonaceous deposit material in at least one regeneration zone to thereby regenerate at least a portion of the hydrocarbon conversion catalytic activity of said solid particles and to form a regeneration zone flue gas containing sulfur trioxide; and (3) repeating steps (1) and (2) periodically, the improvement which comprises, using, in intimate admixture with said solid particles, a minor amount of discrete entities having a composition different from said solid particles and comprising at least one metal-containing spinel including a first metal and a second metal having a valence higher than the valence of said first metal, the atomic ratio of said first metal to said second metal in said spinel is at least about 0.17 and said spinel having a surface area in the range of about 25 m^2/gm. to about 600 m^2/gm., said discrete entities being present in an amount sufficient to reduce the amount of sulfur oxides in said flue gas.

4,469,590
PROCESS FOR THE HYDROGENATION OF AROMATIC HYDROCARBONS

Robert C. Schucker, and Kenneth S. Wheelock, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 17, 1983, Ser. No. 505,213
Int. Cl.³ C10G *45/08, 45/10*
U.S. Cl. 208—143 12 Claims

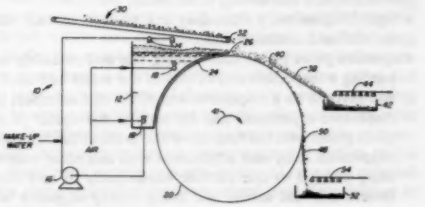


1. A process for the hydrogenation of aromatic hydrocarbons, which comprises: contacting said aromatic hydrocarbons, at hydrogenation conditions, in a hydrogenation zone in the presence of added hydrogen and the substantial absence of an inorganic sulfur compound, with a catalyst comprising (a) a noble metal component of Group VIII of the Periodic Table of Elements, and (b) a steamed support comprising a transition metal oxide composited with a non-zeolitic inorganic oxide, said transition metal oxide being selected from the group consisting of tungsten oxide, niobium oxide and mixtures thereof, said support having been steamed at a temperature of 500° to 1200° C.

4,469,591
FOAM SEPARATOR

William E. Coyle, Reedley; Robert E. Gunnerson, Manteca, and Richard W. Shoults, Fresno, all of Calif., assignors to Sun-Maid Growers of California, Stockton, Calif.

Filed Nov. 1, 1982, Ser. No. 419,682
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—170 15 Claims



1. A separator for separating high density and low density particles from a mixture thereof, said separator comprising:

means for continuously generating a bed of foam;

means for conveying the bed of foam along a path;

means for feeding the mixture onto the foam at a first point along the path, whereby the low density particles are supported by the foam and the high density particles fall through the foam to the conveying means;

means for diverting a top layer of the foam from the conveying means located at a second point along the path downstream from the first point, whereby the low density particles are removed; and

means located at a third point along the path downstream

from the diverting means for collecting the high density particles from the surface of the conveying means.

4,469,592

POWER SIEVE WITH SCREEN BEATERS

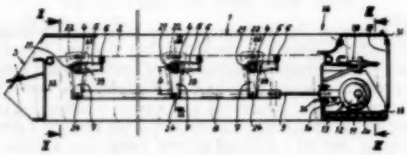
Rudolf Krause, Bad Homburg, and Günter Sapp, Radevormwald, both of Fed. Rep. of Germany, assignors to "Rhewum" Rheinische Werkzeug- und Maschinenfabrik GmbH, Remscheid, Fed. Rep. of Germany

Filed Aug. 10, 1982, Ser. No. 406,955

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134116; Sep. 9, 1981, 3135676; Mar. 20, 1982, 3210290

Int. Cl.³ B07B 1/28

U.S. Cl. 209—322 12 Claims



1. A power sieve comprising:

a generally planar and longitudinally extending frame having upstream and downstream ends and a pair of laterally spaced side members extending longitudinally between said ends,

a generally planar screen spanned longitudinally within said frame;

a plurality of longitudinally spaced and substantially parallel beater shafts underneath said screen;

respective beater arms extending generally parallel to said screen from said beater shafts and having outer ends engageable with the underside of said screen;

respective actuation arms extending radially from said beater shafts and having outer ends;

a rigid longitudinally extending link pivoted on said outer ends of said actuation arms;

respective pivot plates each having one end rotatably supporting a respective end of one of the shafts and another end pivoted on a respective one of the side members at a respective adjustment axis for angular movement of said pivot plates with the respective shafts about the respective adjustment axes, said adjustment axes extending substantially parallel to one another transversely of said frame underneath said screen and being axially alignable with the outer ends of the respective actuation arms;

respective locking means for arresting pivotal movement of said pivot plates with the respective beater arms in any of a multiplicity of positions angularly offset relative to the alignment of the outer ends of the respective actuation arms and the respective adjustment axes; and

drive means on said frame connected to said link for simultaneously and synchronously pivotally oscillating said beater shafts with the respective beater arms to hammer said outer ends of said beater arms against said screen, whereby when said screen is inclined down from said upstream end and particulate material is loaded onto said screen at said upstream end the particulate material migrates down along said screen to said downstream end with the smaller fractions falling through said screen.

4,469,593

BLOOD PURIFICATION APPARATUS

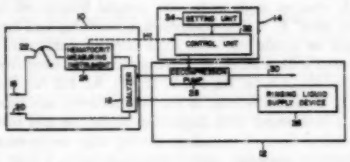
Toshikazu Ishihara; Tomoyuki Kitano, both of Aichi, Japan; Kenji Maeda, Yatagawa Park House C, 10-7, Daiko-cho, Higashi-ku, Nagoya, Aichi, Japan, and Toru Shinzato, Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho and Kenji Maeda, both of Aichi, Japan

Filed Mar. 9, 1983, Ser. No. 473,574

Claims priority, application Japan, Mar. 10, 1982, 57-37457; Dec. 21, 1982, 57-224743

Int. Cl.³ B01D 13/00

U.S. Cl. 210—96.2 25 Claims



1. A blood purification apparatus comprising: an extracorporeal circulation system, a blood purifier provided in said system for purifying blood by dialysis or filtration through a semipermeable membrane,

a circulating blood volume measuring instrument connected to said extracorporeal circulation system for measuring changes in the circulating blood volume within a patient's body,

a control section connected to said circulating blood volume measuring instrument, comprising a memory for storing a program for a pattern of changes in the circulating blood volume during blood purification, said program being matched to the condition of the patient, and

a regulator connected to said extracorporeal circulation system and said control section, for controlling the circulating blood volume, said regulator being controlled by said control section on the basis of the circulating blood volume measured during blood purification and the programmed amount,

whereby optimum blood purification is carried out while maintaining the circulating blood volume at a prescribed level.

4,469,594

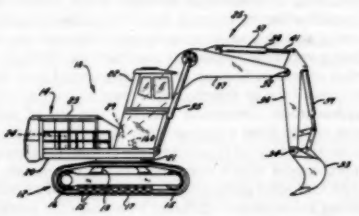
HIGH PRESSURE HYDRAULIC SYSTEM AND SELF-CLEANING FILTER ASSEMBLY THEREFOR

Rainer Poetter, Calw, Fed. Rep. of Germany, assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Nov. 12, 1982, Ser. No. 440,981

Int. Cl.³ B01D 35/02, 35/22

U.S. Cl. 210—108 12 Claims



9. A filter assembly for a high pressure hydraulic system comprising: at least one filter; and a one-way check valve responsive to fluid flow and having open and closed positions and connected in parallel with said filter; said assembly being operable so that when fluid moves in one direction relative to

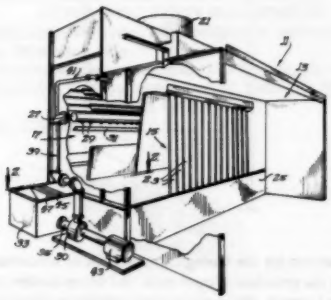
said filter and said valve, said check valve closes and substantially all of the fluid passes through said filter; and when fluid moves in an opposite direction relative to said filter and said valve, said check valve opens and most of the fluid passes through said check valve and the remainder passes through said filter.

4,469,595

FILTER ASSEMBLY FOR A SPRAY BOOTH

Stanley C. Napadow, Elgin, Ill., assignor to Protectaire Systems Company, Elgin, Ill.

Filed Sep. 30, 1982, Ser. No. 431,156
Int. Cl.³ B01D *35/08*
U.S. Cl. 210—111 **9 Claims**



1. In a paint spray apparatus of the type including a booth, means including a pump for delivering water to an upper portion of said booth, means for causing said water to flow downwardly in said booth for washing paint particles from air flowing through said booth, the improvement comprising a holding tank at the bottom of said booth for collecting said water arranged to collect paint particles on the bottom of said holding tank to allow for a substantial build up of sludge in said holding tank, a filter tank outside said booth and between said holding tank and said pump, a water inlet between said tanks allowing water to flow from said holding tank into the filtering tank to be filtered, a filter assembly in said filtering tank including a pair of filters arranged in series and operable to filter said paint particles from the water flowing from said holding tank into said holding tank a water inlet to said pump in said filtering tank on the downstream side of said filters, said filters being individually removable from outside said filter tank.

8. The improvement of claim 1, including indicator means in said filter tank and responsive to the water level in said filter tank downstream of said filters to indicate when at least one of said filters has become clogged.

4,469,596

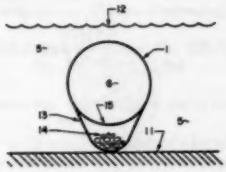
FLUID TRANSPORT CONDUIT SYSTEM IN EQUILIBRIUM WITH ITS ENVIRONMENT

Frederick W. Kantor, 523 W. 112th St., New York, N.Y. 10025

Filed Sep. 27, 1982, Ser. No. 423,524
Int. Cl.³ C02C *1/02*
U.S. Cl. 210—137 **31 Claims**

31. A safely augmented conduit system for conducting a municipal and/or industrial waste stream therein through a body of water without substantial risk of pollution thereto, comprising:

a conduit positioned within a body of water, said conduit having a flexible wall adapted to maintain said waste stream in substantial pressure equilibrium with said body of water; and flow augmentation means to augment safely the flow, in one direction, along through said conduit without causing substantial departure from said pressure equilibrium, said flow augmentation means including



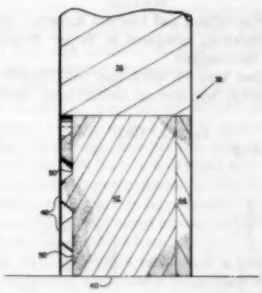
means permitting the flow of said waste stream therepast in the event of failure of said flow augmentation means.

4,469,597

CHROMATOGRAPHIC COLUMN TERMINATOR ASSEMBLY

Lambert H. Mott, P.O. Box Drawer L, Farmington, Conn. 06032

Filed Jun. 12, 1981, Ser. No. 272,996
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—198.2 **10 Claims**



1. A chromatographic column terminator element for use in a fitting connecting a chromatographic column with an end flow tube comprising a solid rim-like housing member having a central aperture therein and a duplex porous frit member positioned within said aperture and secured to said housing, said duplex frit member comprising a main body portion providing pores having a first relatively higher micron rating and a thin layer on one surface of the main body portion providing pores having a relatively lower micron rating, said thin layer being adapted to face toward said chromatographic column, said main body portion having a coarse pimpled surface on the face of said body portion opposite said thin layer, said pimpled surface being adapted to facilitate lateral fluid flow relative to said main body portion.

4,469,598

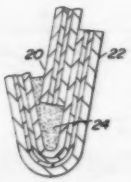
FILTER DEVICE

Leslie R. White, Horseheads, N.Y., assignor to The Hilliard Corporation, Elmira, N.Y.

Filed Dec. 9, 1982, Ser. No. 448,145
Int. Cl.³ B01D *25/04*
U.S. Cl. 210—489 **12 Claims**

1. A filter device comprising a support on which is mounted a multilayer filter, said support constructed so as to allow fluid to flow therethrough and having means to prevent bypassing of fluid being filtered, said filter having a central highly absorbent layer which expands in the presence of moisture and positioned between an outer layer and an inner layer, the outer

layer being absorbent paper layer, the inner layer being a layer of microglass mounted on an inner ply, the outer layer being



the thickest layer and being at least several times as thick as the central layer, the layers providing for graduated density in the direction of flow from the outer layer to the inner ply.

4,469,599

APPARATUS AND METHOD FOR DENITRIFYING WATER

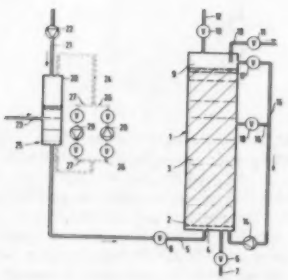
Henry Gros, Winterthur, and Markus Kyburz, Unterentfelden, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 17, 1982, Ser. No. 379,135

Claims priority, application Switzerland, May 20, 1981, 3289/81

Int. Cl.³ C02F 3/08

U.S. Cl. 210—610 **15 Claims**



1. An apparatus for denitrifying water comprising

a gas loading stage operatively connected to a source of hydrogen for dissolving hydrogen gas into a flow of raw water, said gas loading stage including a pressure vessel for receiving raw water and hydrogen gas and means connected to said pressure vessel for increasing the pressure of the raw water whereby the raw water can be saturated with hydrogen at an excess pressure;

a pipe extending from said pressure vessel to convey hydrogen-loaded raw water therefrom;

a reactor disposed in an open circuit with said gas loading stage, said reactor being disposed downstream of said gas loading stage and connected to said pipe for receiving the hydrogen gas-loaded raw water flow at a lower end, said reactor having a bed of micro-organisms for decomposing nitrate and nitrite ions, an outlet for gas at an opposite upper end and an outlet for treated water at said opposite upper end whereby the hydrogen gas and raw water pass in concurrent relation upwardly through said reactor.

4,469,600

PROCESS FOR BIOLOGICAL WASTEWATER TREATMENT

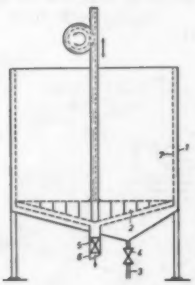
Allen Frydman, and Hans Reimann, both of Munich, Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 482,757, Apr. 7, 1983,. This application May 11, 1983, Ser. No. 493,489

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1982, 3213074

Int. Cl.³ C02F 3/04

U.S. Cl. 210—610 **10 Claims**



1. In a process for the biological treatment of wastewater in a reactor in the presence of open-pore and compressible carrier material for biomass, the improvement comprising loading said open pore and compressible carrier material, prior to being used in the reactor, with bacteria, finely divided inorganic and/or organic compounds, selected for wastewater purification, with said loading being conducted in the presence of the selected bacteria and/or compounds distributed in water, by compressing and simultaneously removing air from said carrier and subsequently expanding said carrier to simultaneously absorb water, together with the selected bacteria and/or compounds, substantially into the open pores in the interior of the carrier material to replace removed air, and introducing resultant loaded carrier material into the reactor to start up the biological treatment of the wastewater, thereby shortening the start-up time to conduct the biological process substantially as compared to using a non-loaded carrier material.

4,469,601

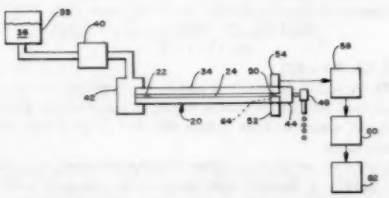
SYSTEM AND APPARATUS FOR MULTI-DIMENSIONAL REAL-TIME CHROMATOGRAPHY

Lois A. Beaver, Rockville, Md., and Georges A. Guiochon, Paris, France, assignors to Varex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 244,743, Mar. 17, 1981, abandoned. This application Sep. 7, 1982, Ser. No. 415,760

Int. Cl.³ B01D 15/08

U.S. Cl. 210—658 **36 Claims**



1. A method of multi-dimensional chromatography comprising:

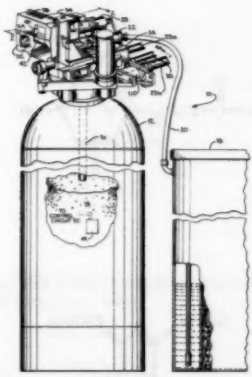
(A) chromatograpically separating an unknown into an array of constituents in a chromatographic bed;
(B) chromatographically separating said constituents into a second array of sub-constituents in a closed vessel by pumping a fluid through said bed in a direction crossing said array; and
(C) detecting said sub-constituents as they flow past fixed positions in said second direction.

4,469,602

MICROCOMPUTER CONTROLLED DEMAND/SCHEDULED WATER SOFTENER HAVING AUTOMATIC RESIN BED SENSING

J. David Seal, Waukesha, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 412,279, Aug. 27, 1982, Pat. No. 4,426,294. This application Jun. 10, 1983, Ser. No. 502,967
Int. Cl.³ B01J *49/00*
U.S. Cl. 210—662 9 Claims



3. A method of controlling a water treatment device having a particle bed requiring a regeneration comprising the steps of:
(a) measuring the quantity of treated water leaving the water treatment device for a given period of time;
(b) determining the total quantity (Q_C) of treated water consumed since the previous regeneration in accordance with the measured quantity of treated water leaving said water treatment device;
(c) determining the actual average of daily consumption of treated water in accordance with said measured quantity of treated water leaving the water treatment device;
(d) establishing a reserve quantity of treated water as a proportion of the actual average daily quantity of soft water consumed;
(e) determining if the particle bed water treating capacity has been depleted to a predetermined percentage (P) of the total water treatment device treating capacity and if so, calculating the total particle bed treating capacity (Q_T) as a proportion of the total quantity of treated water consumed since the previous regeneration;
(f) calculating the remaining particle bed treating capacity (Q_R) from the total resin bed capacity (Q_T) and quantity of treated water consumed since the previous regeneration (Q_C); and
(g) initiating regeneration of the particle bed if the remaining particle bed treating capacity is less than said established treated water reserve.

4,469,603

SURFACE-ACTIVE COMPOSITIONS AND METHOD FOR DISPERSING OIL SLICKS

Andre Lepain, Rosieres, and Alain G. R. Charlier, Overijse, both of Belgium, assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Aug. 6, 1982, Ser. No. 405,791
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—749 27 Claims

1. A composition for dispersing oil slicks consisting essentially of:
from about 65 to 75 weight percent of a blend of a fatty acid sorbitan monoester said fatty acid is an aliphatic monocarboxylic acid containing from 10 to 20 carbon atoms, a polyalkyleneoxide adduct of a fatty acid sorbitan monoester and a 75% aqueous solution of an alkaline salt of a dialkylsulfosuccinate, the weight percentage of said salt, based on dry salt and on dry blend, being from about 35 to about 40 percent and the weight ratio of said fatty acid sorbitan monoester to said adduct being from about 60:40 to about 40:60, said blend having an HLB in the range from about 9 to about 10.5 and
from about 35 to 25 weight percent of a hydrocarbon-free solvent mixture of water and a monoether of a glycol, the weight ratio of water to said ether in said mixture being from about 60:40 to about 40:60,
the total amount of water in said composition is 20 to 27.5 weight percent, and said composition has a viscosity in the range from about 475 to about 575 centistokes at −10° C.

22. A method for dispersing an oil slick which comprises spraying said slick with an effective oil slick dispersing amount of a composition consisting essentially of:
from about 70 to 75 weight percent of a blend of oleic acid sorbitan monoester, a polyethyleneoxide adduct of oleic acid sorbitan monoester and a 75% aqueous solution of di(ethylhexyl)sulfosuccinate sodium salt, the weight percentage of said salt, based on dry salt and on dry blend, being from 35 to 40 percent and the weight ratio of oleic acid sorbitan monoester to its polyethylene oxide adduct being about 55:45, said blend having an HLB in the range from about 9 to about 10.5 and
from about 30 to 25 weight percent of a hydrocarbon-free solvent mixture of water and a monoalkylether of a glycol selected from the group consisting of monoethylene glycol, diethylene glycol, monopropylene glycol and dipropylene glycol, the alkyl radical containing from 1 to 4 carbon atoms, the total amount of water in said composition is 20 to 27.5 weight percent, and said composition has a viscosity in the range from about 475 to 575 centistokes at −10° C.

4,469,604

SULFONATED PHENOLIC MATERIAL AND ITS USE IN POST PRIMARY OIL RECOVERY

Paul R. Stapp, and Jerry E. Pardue, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 25, 1982, Ser. No. 382,042
Int. Cl.³ E21B *47/22*
U.S. Cl. 252—8.55 D 42 Claims

1. Surfactant composition comprising
brine,
a sulfonated composition produced by a process comprising reacting a phenolic material comprising one or more alkyl substituted hydroxy aromatic compounds having the formula

wherein R is alkyl having 1 to 30 carbon atoms, with the

proviso that at least one radical R has 6 to 30 carbon atoms,

wherein n is a number from 1 to 3,

Ar is a substituted or unsubstituted aromatic hydrocarbyl moiety having the —OH and the X in ortho position to each other, connected to neighboring aromatic carbons,

wherein X is hydrogen,

with the proviso that the total number of carbons in all n radicals R and the aromatic moiety Ar together are in the range of 12 to about 40,

with a sulfonating agent to produce a sulfonic acid intermediate having an $—SO_3H$ group in ortho position to the —OH group of the starting material,

and neutralizing this sulfonic acid intermediate product with a base to produce a sulfonate having the formula

wherein R, n, Ar have the meaning as defined above and wherein Cat is selected from the group consisting of —Na, —K and $—NHR_3^{(1)}$

wherein $R^{(1)}$ is hydrogen or an alkyl radical having 1 to 3 carbon atoms or hydroxyalkyl with 2 or 3 carbon atoms, and

a cosurfactant.

4,469,605

FABRIC SOFTENING HEAVY DUTY LIQUID DETERGENT AND PROCESS FOR MANUFACTURE THEREOF

Pallassana N. Ramachandran, Robbinsville, and Paul S. Grand, Highland Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,261

Int. Cl.³ C11D *3/12*; D06M *13/24*

U.S. Cl. 252—8.7 **9 Claims**

1. A fabric softening heavy duty liquid detergent comprising 5 to 15% of alkali metal linear or branched higher alkylbenzene sulfonate wherein the higher alkyl is of 12 to 13 carbon atoms, 2 to 5% of alkali metal alkyl polyethoxy sulfate wherein the alkyl is of 10 to 18 carbon atoms and the polyethoxy is of 3 to 11 ethylene oxide groups, 6 to 26% of builder salt selected from the group consisting of alkali metal tripolyphosphate, alkali metal carbonate, alkali metal nitrilotriacetate, and alkali metal citrate, and mixtures thereof, 12 to 15% of a swelling bentonite, and 40 to 75% of water.

4,469,606

STABILIZATION SYSTEMS FOR FIBER FINISHES

William J. Reid, New Fairfield, and Gerald A. Capocci, Greenwich, both of Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,475

Int. Cl.³ D06M *13/18*

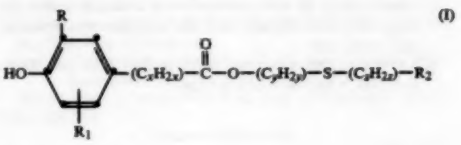
U.S. Cl. 252—8.8 **14 Claims**

1. A fiber treating composition comprising

(A) a lubricant selected from the group consisting of polyoxyalkylene ether polyols, alkoxylates of fatty acids, and alkoxylates of fatty acids blended with unsaturated vegetable oils; and

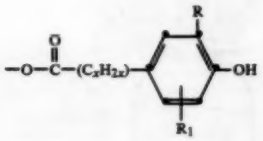
(B) an effective stabilizing amount of a mixture of 2,4-bis(n-octylthio)-6-(4-hydroxy-3,5-di-tert.butylanilino)-1,3,5-triazine and a multi-functional hindered phenol corresponding to the formulae:

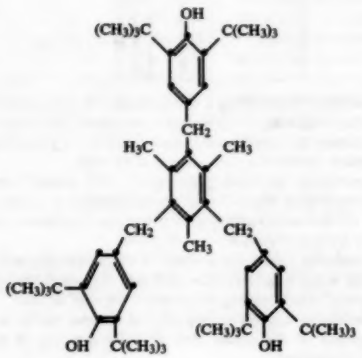
-continued



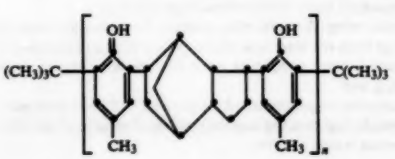
(I)

wherein R and R_1 independently are C_1–C_6 alkyl, x is 0 to 6, y and z independently are 2 to 20 and R_2 is hydrogen hydroxy or





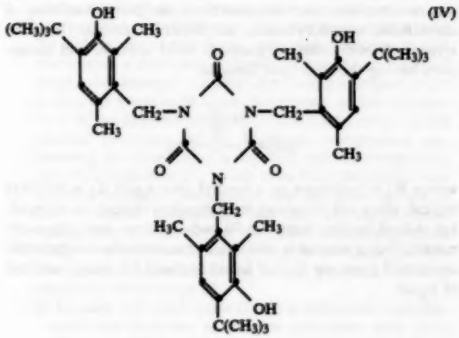
(II)



(III)

-continued

wherein n is the number of repeating units



(IV)

said triazine and said phenol being present in said mixture in a weight ratio of from 1:1 to 1:9.

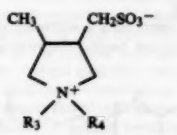
4,469,607

PYRROLIDINIUM METHANE SULFONATES AS SURFACTANTS IN ENHANCED OIL RECOVERY

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,551
Int. Cl.³ E21B 43/22
U.S. Cl. 252—8.55 D 6 Claims

1. A method for the recovery of oil from a subterranean oil reservoir penetrated by spaced apart injection system and production system in which an aqueous surfactant fluid is injected into the reservoir via the injection system to displace oil to the production system, said method comrising injecting into said reservoir an aqueous fluid comprising dissolved surfactant in an amount sufficient to enhance the recovery of oil, said surfactant being a compound according to the formula



where R_3 and R_4 may be the same or different and may be alkyl or aryl, provided that R_3 and R_4 contain together at least ten carbon atoms.

4,469,608

SURFACTANT COMPOSITION CONTAINING ALKYLATED BIPHENYLYL PHENYL ETHER SULFONATES

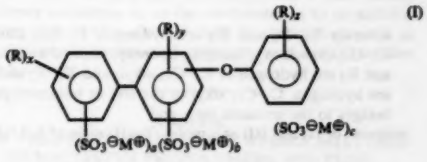
Paul E. Hinkamp, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 910,241, May 30, 1978, Pat. No. 4,357,281.
This application Jul. 30, 1982, Ser. No. 403,826
Int. Cl.³ E21B 43/22
U.S. Cl. 252—8.55 D 8 Claims

1. An aqueous anionic surfactant system having a relatively high tolerance to multivalent cations, the system comprising:

(a) a substantially homogeneous aqueous liquid system containing at least one dissolved or dispersed petroleum sulfonate surfactant in amount which is sufficient to enable the system to displace oil when it is injected into a porous, oil-bearing subterranean rock reservoir; and

(b) at least one alkylated biphenylyl phenyl ether sulfonate of the formula



(I)

wherein R is an alkyl radical of at least 6 carbon atoms and each R can be the same or different;

$M^{\oplus}$ is hydrogen, alkali metal ion, alkaline earth metal ion or ammonium ion radical and each $M^{\oplus}$ can be the same or different;

a, b and c are individually integers of 0 or 1 with the proviso that the $\Sigma(a+b+c)$ is equal to 2 or 3; and

x, y and z are individually integers of 0–2 with the proviso that $\Sigma(x+y+z) \geq 1$,

said alkylated biphenylyl phenyl ether sulfonate being present in an amount sufficient to improve the multivalent cation tolerance of an aqueous system consisting essentially of water and the petroleum sulfonate surfactant without significantly reducing the interfacial tension-lowering activity of the system.

4,469,609

STABILIZER SYSTEMS USEFUL IN LUBRICATING OILS AND METHOD FOR STABILIZING LUBRICATING OILS

Baldev K. Bandlish, Middlebury, and Walter Nudenberg, Newtown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

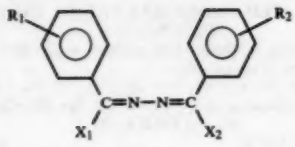
Filed Mar. 11, 1982, Ser. No. 357,029
Int. Cl.³ C10M 1/32, 1/54
U.S. Cl. 252—19 17 Claims

1. A lubricating composition comprising

(a) a lubricating oil selected from the group consisting of polyester based oil, mineral oil and synthetic hydrocarbon oil,

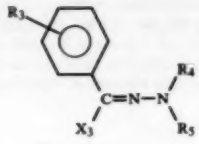
(b) an amine, selected from the group consisting of phenylnaphthylamine, alkylated phenylnaphthylamine, substituted benzylamine, substituted diphenylamines, substituted aniline and substituted phenothiazine,

(c) a compound selected from the group consisting of an azine having the formula



(I)

and a hydrazone having the formula



(II)

wherein R_1, R_2 and R_3 are hydrogen, C_1–C_{12} alkoxy, C_1–C_{12} carbalkoxy, halogen, hydroxy, nitro or amino, R_4 and R_5 are hydrogen or C_1–C_{12} alkyl; and X_1, X_2 and X_3 are hydrogen, C_1–C_{12} alkyl or di-, tri-, or tetramethylene bridges to the aromatic ring; and

mixtures of (I) and (II) at a molar (I)/(II) ratio of 1/1/–1/3.

4,469,610

ELECTROLYTE FOR AN ELECTROLYTIC CAPACITOR

Katsuaki Fukuda, and Takato Ito, both of Tokyo, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,897
Int. Cl.³ H01G 9/02
U.S. Cl. 252—62.2 **4 Claims**

1. An electrolyte for an electrolytic capacitor, comprising:

a main solute comprised of a long chain dibasic acid with 12 to 22 carbon atoms and an alkyl group at the side chain thereof or a salt thereof;

the solute being dissolved in a solvent comprised of ethylene glycol; and

an additional solute dissolved in the solvent, the additional solute being selected from the group consisting of (1) a polycarboxylic acid, (2) an inorganic acid selected from the group consisting of phosphoric acid and sulfuric acid, (3) 8-oxyquinoline and (4) ethylenediamine tetraacetic acid or a salt thereof.

4,469,611

WATER-BASED HYDRAULIC FLUIDS

Kenneth L. Snyder, Jr.; William H. Keskey, and Nitis Sarkar, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 1, 1982, Ser. No. 438,546
Int. Cl.³ C10M 3/04, 3/12
U.S. Cl. 252—75 **28 Claims**

1. A substantially oil-free hydraulic fluid or metalworking composition which maintains an essentially Newtonian and shear stable viscosity comprising an aqueous liquid and a thickening amount of a water-soluble synthetic addition copolymer consisting essentially of the reaction product of an ethylenically unsaturated polyalkyleneoxy containing monomer, a water-soluble ethylenically unsaturated monomer and a water-insoluble ethylenically unsaturated monomer such that the viscosity of said composition approaches that of an oil-based hydraulic fluid or metalworking composition.

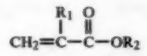
4,469,612

AGGLOMERATION OF MINERAL-DERIVED FINES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Oct. 26, 1982, Ser. No. 436,772
Int. Cl.³ C09K 3/22
U.S. Cl. 252—88 **20 Claims**

1. A method for agglomerating oil shale-derived fines wherein said oil shale-derived fines are contacted with a liquid comprising (1) water and (2) a polymeric material selected from the group consisting of homopolymers and salts of homopolymers of acrylic acid and methacrylic acid, copolymers and salts of copolymers of acrylic acid with methacrylic acid and the copolymers and salts of copolymers of one or more monomers of acrylic acid and methacrylic acid together with any one or more monomers selected from the group consisting of acrylamide, methacrylamide, acrylonitrile, methacrylonitrile, styrene, N,N-dimethylacrylamide, vinyl acetate, and monomers having the structural formula:



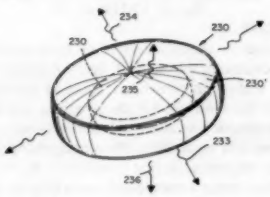
where R_1 is hydrogen or a methyl group and R_2 is an alkyl radical, alkoxyalkyl radical, hydroxyalkyl radical, or aminoalkyl radical, having from 1 to 20 carbon atoms, said polymeric material being present in said liquid in a concentration between about 0.05 gram per liter of liquid to about 5.0 grams per liter of liquid.

4,469,613

DETERGENT BAR CONTAINING POLY(EPSILON CAPROLACTONE) AND AROMATIZING AGENT

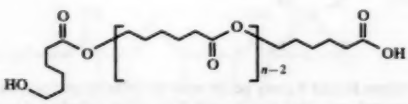
Marina A. Munteanu, New York, N.Y.; Edward S. Oltarzewski, Mercerville, N.J.; Leon Shechter, Summit, N.J., and Craig B. Warren, Rumson, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Feb. 23, 1983, Ser. No. 468,997
Int. Cl.³ C11D 17/00
U.S. Cl. 252—92 **2 Claims**

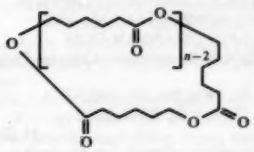


1. A detergent bar comprising:

(i) an aromatized plastic core comprising a scented poly(epsilon caprolactone) homopolymer having the structure:



and from 0 up to a minor proportion of the structure:



wherein n is an integer of from about 500 up to about 1,200 with the proviso that the average n in the system varies from about 600 up to about 800 in the solid phase and imbedded in said polymer an aromatizing agent which is compatible with said polymer and a stabilizing agent;

(ii) surrounding said plastic core and in intimate contact with the surface area of said plastic core, and adhereing to said plastic core a detergent composition existing in the solid phase, said detergent composition having a defined outer surface the quantity of aromatizing agent within the plastic core, the physical properties of the plastic core, and the physical properties of the detergent composition surrounding the plastic core being such that the aromatizing agent is transported at a steady state from the plastic core into said detergent composition past the outer surface of said detergent composition and into the environment surrounding said detergent bar, said aromatizing agent being compatible with said detergent composition, said detergent bar being produced by the process consisting essentially of the steps of:

(a) forming a flowable mass of said poly(epsilon caprolactone) homopolymer in intimate admixture with from 1% up to 30% by weight of aromatizing agent to form a flowable mass;

(b) forming an extruded rod from said flowable mass;

(c) pelletizing said extruded rod thereby forming a thermoplastic polymeric pellet having imbedded therein from 1% up to 30% aromatizing agent;

(d) collecting a plurality of said aromatized polymeric pellets and forming the plurality of aromatized thermoplastic polymeric pellets into an aromatized thermoplastic core by means of fusion of the plurality of pellets in a mold;

(e) propelling a detergent composition in the fluid state in such a manner as to cause said detergent to surround the aromatized plastic core; and

(f) causing the detergent composition surrounding the aromatized thermoplastic polymeric core to harden;

whereby said aromatizing agent is capable of being transported at a steady state into said detergent and into the environment surrounding said detergent on use thereof.

4,469,614

CHEMICAL DISINFECTANT AND STERILANT COMPOSITION COMPRISING ACIDIC GLUTARALDEHYDE

Howard Martin, 909 Pershing Dr., Silver Spring, Md. 20910

Filed Feb. 22, 1983, Ser. No. 468,044

Int. Cl.³ A61L *13/00*; C11D *3/48*

U.S. Cl. 252—106 **7 Claims**

1. A chemical disinfectant and sterilant, comprising:

a basic formulation of chemical ingredients, said basic formulation of said chemical ingredients consisting of the following optimal quantities of said chemical ingredients, said optimal quantities being by weight of the total weight of said basic formulation: glutaraldehyde (acidic) 227.2 grams; ortho phenyl phenol 29.0 grams; para tertiary amyl phenol 1.0 grams; benzotriazole 3.5 grams; sodium aryl alkyl sulfonate 3.5 grams; citric acid 5.0 grams; sodium biphosphate 118.6 grams; and 1081.5 grams of water, the total mixture of said disinfectant and sterilant having a total optimal weight of 1469.3 grams, said respective weights of said chemical ingredients and said water being 15.46% glutaraldehyde (acidic), 1.98% ortho phenyl phenol, 0.07% para tertiary amyl phenol, 0.24% benzotriazole, 0.24% sodium aryl alkyl sulfonate, 0.34% citric acid, 8.07% sodium biphosphate, and 73.60% water, said formulation of said chemical ingredients forming a base stock solution.

4,469,615

WATER TREATING COMPOSITIONS

Setsuo Tsuruoka; Ichito Tasaka, both of Amagasaki; Yuji Kawamura, Inuyama; Shizuo Kimata, Nagoya, and Tatsuki Wabiko, Takarazuka, all of Japan, assignors to Kohryu Industrial Co. Ltd., Osaka and Toagosei Chemical Industrial Co., Tokyo, both of, Japan

Filed Nov. 9, 1982, Ser. No. 440,282

Claims priority, application Japan, Nov. 11, 1981, 56-179816

Int. Cl.³ C02F *5/10*; C23F *11/12*

U.S. Cl. 252—180 **15 Claims**

1. A water treating composition comprising a water-soluble copolymer consisting of, as the components, (A) an addition reaction product of a glycidyl ether or glycidyl ester and an α,β-ethylenically unsaturated carboxylic acid and (B) another vinyl monomer.

4,469,616

LOW TEMPERATURE, STORAGE STABLE MIXTURES OF POLYESTER PREPOLYMERS AND FLOW MODIFIERS

Fritz Hostettler, R.F.D. 318E, Stillhouse Rd., Freehold, N.J. 07728

Filed Jun. 27, 1983, Ser. No. 508,321

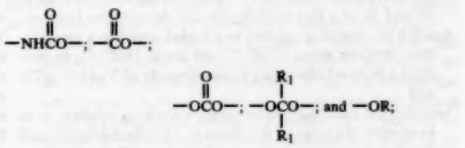
Int. Cl.³ C09K *3/00*; H05B *33/00*

U.S. Cl. 252—182 **31 Claims**

1. A stable, compatible liquid mixture which does not phase separate when stored for several days at temperatures substantially below normal room temperature comprising:

(a) an isocyanato-containing prepolymer obtained from the reaction of (i) a diphenylmethane diisocyanate and (ii) linear or slightly branched polyesterpolyols having hydroxyl equivalent weights of from about 400 to about 2250 and an average hydroxyl functionality of from 2 to about 3, said diisocyanate and said polyesterpolyol being used in such quantities so as to provide at least about 2.5 NCO equivalents per OH equivalent, and

(b) from about 3 to about 35 parts by weight, per 100 parts by weight of said prepolymer, of a non-hydroxyl flow modifier, said flow modifier having the following characteristics: (i) a boiling point above about 150° C., (ii) normally-liquid at 20° C. or relatively low melting solid which forms a compatible liquid mixture with said prepolymer, (iii) an average molecular weight of from about 100 to approximately 3000, and (iv) consisting essentially of carbon and hydrogen atoms in the form of monovalent or polyvalent hydrocarbon groups or mixtures of such groups; etheric oxygen in the form of oxyalkylene; and at least of a group having the following structural configuration;



each R_1, individually, being hydrogen or a monovalent hydrocarbon group, and R being a hydrocarbyl group; and wherein each of the unsatisfied bonds of the above structural units are monovalently bonded to separate carbon atoms of the flow modifier molecule.

4,469,617

OXIDIZING MEDIUM FOR DYES

Ralph A. Davis, and Randy C. Stauffer, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 140,358, Apr. 14, 1980, Pat. No. 4,401,435.
This application Apr. 6, 1983, Ser. No. 482,398
Int. Cl.³ D06P 1/22, 1/28
U.S. Cl. 252—186.21 9 Claims

1. An acidic, aqueous oxidant including ionized bromate, iodate and a soluble vanadium-containing material.

4,469,618

LIQUID CRYSTAL MIXTURE

Shinji Hasegawa; Kazuhisa Toriyama, both of Mobara, Japan; Ludwig Pohl, Darmstadt, and Georg Weber, Erzhausen, both of Fed. Rep. of Germany, assignors to Hitachi, Ltd., Tokyo, Japan and Merck Patent GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,246
Claims priority, application Japan, Jul. 8, 1981, 56-105511
Int. Cl.³ C09K 3/34; G02F 1/13
U.S. Cl. 252—299.5 10 Claims

1. A liquid crystal composition consisting essentially of:

trans-4-n-propyl-(4-ethylphenyl)-cyclohexane in an amount of 15 to 26 mole %,

trans-4-propyl-(4-cyanophenyl)-cyclohexane in an amount of 18 to 24 mole %,

trans-4-n-pentyl-(4-cyanophenyl)-cyclohexane in an amount of 22 to 30 mole %,

trans-4-n-pentyl-(4'-ethylbiphenyl-4)-cyclohexane in an amount of 16 to 25 mole %, and

4-(trans-4-n-pentylcyclohexyl)-4'-(trans-4-n-propylcyclohexyl)-biphenyl in an amount of 5 to 9 mole %.

4,469,619

METHOD OF MANUFACTURING A GREEN PHOSPHOR

Katsutoshi Ohno, Tokyo; Tomohiko Abe, Yokohama, both of Japan; Teruhiko Hoshina, deceased, late of Kanagawa, Japan; by Ikuko Hoshina, heir, Yokohama, Japan; by Aya Hoshina, heir, Yokohama, Japan, and by Ken-Nosuke Hoshina, heir, Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 430,952
Claims priority, application Japan, Sep. 30, 1981, 56-155084
Int. Cl.³ C09K 11/475
U.S. Cl. 252—301.4 R 6 Claims

1. A method for the manufacture of a luminescent material having the formula:

$$Y_3Al_5O_{12}:Tb$$

which comprises the steps of:

preparing a mixture of Y_2O_3, Al_2O_3 and Tb_4O_7in amounts suitable for synthesis of $Y_3Al_5O_{12}$:Tb together with up to 30 mol % of a flux of BaF_2, $BaCl_2$, or mixtures thereof,

heating the resulting mixture in a sealed vessel to a temperature between about 1300° C. and about 1600° C., to produce a product consisting predominantly of $Y_3Al_5O_{12}$:Tb, and

leaching the resulting product with a leaching solution so as to remove the residual flux from said product wherein said flux is present in an amount sufficient to effect a luminescent material exhibiting a higher brightness than the material prepared as above absent the flux, and wherein said luminescent material exhibits a higher brightness than the luminescent material prepared as above but where the heating is conducted in an unsealed covered vessel.

4,469,620

DRY BLEND THICKENING COMPOSITION CONTAINING BENZOQUINONE AND POLYGALACTOMANNAN GUM

Rachel S. Kohn, Springfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Feb. 11, 1983, Ser. No. 465,709
Int. Cl.³ C09K 7/00; B01J 13/00
U.S. Cl. 252—315.3 21 Claims

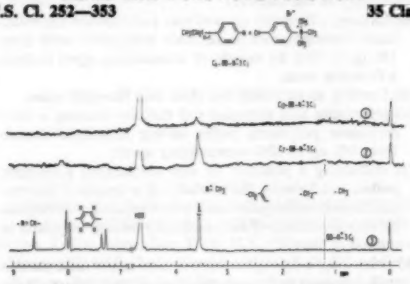
1. A dry blend composition adapted for application as a thickening agent in aqueous solutions which comprises (1) polygalactomannan gum, (2) between about 0.1–10 weight percent of benzoquinone, based on the weight of polygalactomannan gum, and (3) a water-soluble basic reagent.

4,469,621

MOLECULAR AGGREGATE HAVING AN ORDERED STRUCTURE

Toyoki Kunitake, and Yoshio Okahata, both of Fukuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 34,699, Apr. 30, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 276,447
Claims priority, application Japan, Apr. 28, 1978, 53-49736; Dec. 8, 1978, 53-151159
Int. Cl.³ B01F 17/12, 17/16, 17/20, 17/32
U.S. Cl. 252—353 35 Claims



1. A stable molecular aggregate consisting essentially of a surfactant having an ordered structure primarily consisting of a bilayer structure as its basic structural unit, said surfactant comprising a surfactant represented by formula (I) or (II):

$$Cn—Ya—\phi—Yb—Cm—X \quad (I)$$

$$\begin{matrix} & Ya—\phi—Yb—Cm—X \\ Cn & \\ & Ya'—\phi'—Yb'—Cm'—X' \end{matrix} \quad (II)$$

wherein Cn represents a hydrophobic moiety, Ya—ϕ—Yb and Ya'—ϕ'—Yb' each represents a rigid moiety having a length of at least 10 Å, Ya, Ya', Yb and Yb' each represents a divalent coupling group, ϕ and ϕ' each represents a rigid group capable of bonding Ya and Yb or Ya' and Yb', Cm and Cm' each represents a $(CH_2)m$ group, where m is 0 or an integer of 1 to 12, and X and X' represents a hydrophilic moiety selected from the group consisting of sulfonates, ammonium salts, carboxylates, sulfonium salts, phosphates, phosphonium salts, polyethers, polyols, and ampholytic ions.

15. The molecular aggregate of claim 1, wherein X and X' represent a hydrophilic moiety selected from the group consisting of sulfonates and sulfonium salts.

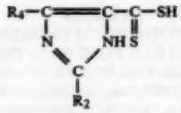
4,469,622

METHOD FOR PREVENTING RUSTING IN SILVER BY USING NOVEL IMIDAZOLE-4(5)-DITHIOCARBOXYLIC ACIDS IN ORGANIC SOLVENT

Natsuo Sawa, Tadotsu, and Tokuichi Saeki, Onohara, both of Japan, assignors to Shikoku Chemicals Corporation, Kagawa, Japan

Division of Ser. No. 370,354, Apr. 21, 1982, Pat. No. 4,394,511. This application Jan. 24, 1983, Ser. No. 460,662
Claims priority, application Japan, Apr. 23, 1981, 56-62240
Int. Cl.³ C23F 11/16
U.S. Cl. 252—391 1 Claim

1. A method for preventing rusting in metallic silver, which comprises applying an organic solvent solution of an imidazole-4(5)-dithiocarboxylic acid represented by the following formula:



wherein R_2 stands for a hydrogen atom or a monovalent hydrocarbon group having up to 20 carbon atoms, and R_4 stands for a hydrogen atom or an alkyl group having up to 4 carbon atoms,
to the surface of metallic silver.

4,469,623

DETECTION OF ARTICLES

Richard D. Danielson, Hastings, and Robert A. Prokop, St. Joseph Township, St. Croix County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 946,614, Sep. 28, 1978, abandoned. This application Aug. 24, 1983, Ser. No. 526,211
Int. Cl.³ C09K 3/00
U.S. Cl. 252—408.1 4 Claims

1. The method of detecting an article which comprises associating therewith, as a tag, vapor permeable microcapsules containing volatile perfluoroalkyl bromide, wherein said perfluoroalkyl bromide has the formula R_fBr where R_f is a straight chain, branched chain, or cyclic perfluoroalkyl radical, or a combination thereof, and contains 3 to 20 carbon atoms, vapors of which diffuse through the walls of the microcapsules and are emitted into the atmosphere surrounding said article, and detecting the presence of said vapors in said atmosphere and thus the presence of said article.

4,469,624

MAGNETIC COATING COMPOSITIONS FOR MAGNETIC RECORDING MATERIALS

Ikuo Ueda, and Rikiya Kai, both of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1982, Ser. No. 454,517
Claims priority, application Japan, May 20, 1982, 57-83979
Int. Cl.³ H01B 1/02
U.S. Cl. 252—513 10 Claims

1. A magnetic coating composition, comprising:
a metal powder selected from the group consisting of a ferromagnetic metal powder and a ferromagnetic alloy powder containing at least 50% by weight iron or nickel, and
1 to 30% by weight based on the total weight of the metal powder of a nitrocellulose having an average degree of polymerization of from 10 to 55.

4,469,625

PROLONGED TACK TONERS FOR THE PREPARATION OF ELECTRIC CIRCUITS

Robert P. Held, Englishtown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1980, Ser. No. 124,606
Int. Cl.³ H01B 1/02
U.S. Cl. 252—514 6 Claims

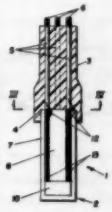
2. A particulate prolonged tack toner consisting essentially of an organic thermoplastic polymer, a solid plasticizer for the polymer, electrically conductive metal particles selected from the group consisting of silver, gold, platinum, palladium, copper and combinations thereof, glass frit, and optionally finely divided inorganic particulate nonglass forming refractory materials, the plasticizer component being present in an amount greater than its compatibility level in the polymer, the metal particles, glass frit and inorganic particulate nonglass forming refractory material being present in amounts of 86 to 98% by weight, 1.3 to 10.3% by weight and 0 to 45% by weight, respectively, the weight percentages of the metal particles and glass frit based on the weight of metal particles, glass frit and any inorganic particulate refractory material present, and the weight percentage of inorganic particulate refractory material based on the weight of glass frit and inorganic particulate refractory material.

4,469,626

COMPOSITION AND METHOD FOR FORMING A THICK FILM OXYGEN SENSING ELEMENT

Wayne D. Tuohig, Birmingham, and Calman S. Sagady, West Bloomfield, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 150,105, May 15, 1980, abandoned. This application May 21, 1981, Ser. No. 265,748
Int. Cl.³ A01B 1/06
U.S. Cl. 252—514 4 Claims



1. A composition for forming a resistive oxygen sensitive layer as a conductive pattern on an insulative ceramic substrate to produce a thick film oxygen sensor element comprising:
a mixture of rutile titanium dioxide, a fluxing agent and platinum, wherein said titanium dioxide is present in an amount of 28–58 percent by weight of the mixture and has a mean particle size of below 10 micrometers, said fluxing agent is present in an amount of between 2–12 percent by weight of the mixture, and said platinum is present in an amount of between 40–80 percent by weight of the mixture such that upon firing of the composition, a layer of between 10–30 micrometers is formed which comprises a continuous sintered network of titanium oxide particles surrounded by isolated platinum particles.

4,469,627

PROCESS FOR DISPERSING HYDROXYPROPYL METHYL CELLULOSE

Thomas J. Trombone, Brooklyn, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,688
Int. Cl.³ C11D 1/14; C08L 1/08
U.S. Cl. 252—548 12 Claims

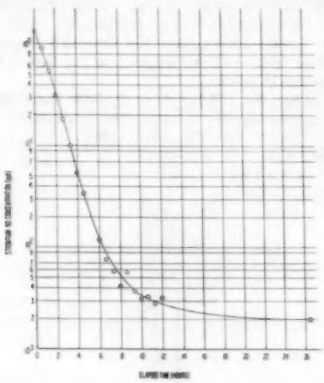
1. A method which facilitates the incorporation of hydroxypropyl methyl cellulose into water or liquid formulations containing water, which comprises forming a premix of hydroxypropyl methyl cellulose dispersed in an aqueous-free organic liquid medium dispersant in which it does not swell or dissolve, selected from the group consisting of liquified nonionic surfactants, higher fatty acids containing 10 to 31 carbon atoms in their chain, anionic surfactants and mixtures thereof, by dispersing one part hydroxypropyl methyl cellulose in about 1 to 10 parts of said liquid organic medium with mild agitation; adding said premix to water or an aqueous-containing liquid formulation, and dispersing therein by means of a short mixing cycle.

4,469,628

FIXATION BY ION EXCHANGE OF TOXIC MATERIALS IN A GLASS MATRIX

Catherine J. Simmons; Joseph H. Simmons, both of 6 Park Overlook Ct.; Pedro B. Macedo, 6100 Highboro Dr., all of Bethesda, Md. 20817, and Theodore A. Litovitz, 3022 Friends Rd., Annapolis, Md. 21401

Continuation of Ser. No. 039,595, May 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 959,222, Nov. 9, 1978, abandoned. This application Apr. 21, 1982, Ser. No. 370,437
Int. Cl.³ C09K 3/00, 11/04
U.S. Cl. 252—629 30 Claims



1. Process which causes the proton (H^+) of silicon-bonded hydroxyl groups on the internal surfaces of porous silicate glass to undergo ion-exchange reaction without occurrence of substantial dissolution of the glass during the reaction which comprises:

(a) impregnating a porous silicate glass characterized by at least 75 mol percent SiO_2, an interconnecting pore structure, and silicon-bonded hydroxyl groups on its surfaces,

(b) with a liquid containing non-radioactive alkali metal cations, non-radioactive Group I(b) metal cations, ammonium cations, or mixtures thereof,

(c) said liquid buffered with non-radioactive ammonium cations to maintain a pH in the range of about 11 to about 13,

(d) for a period of time to provide a distribution of said non-radioactive cations within the interconnected pores of said glass, said cations being bonded to silicon through divalent oxy groups.

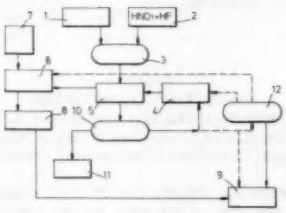
22. Porous silicate glass prepared as defined in claim 1 and containing at least one part per billion by weight of radioactive cation of the group consisting of radioactive cations of rubidium, strontium, the lanthanides, cobalt, cadmium, zirconium, molybdenum, technetium, niobium, ruthenium, palladium, tellurium, cesium, barium, francium, yttrium, radium, the actinides, and mixtures thereof; said radioactive cation bonded to surface silicon through divalent oxygen linkages.

4,469,629

METHOD FOR EXTRACTING FLUORIDE IONS FROM A NUCLEAR FUEL SOLUTION

Léon E. J. Vandevelde; Leon H. J. M. Baetsle, and Daniel J. G. Huys, all of Mol, Belgium, assignors to Centre d'Etude de l'Energie Nucleaire, "C.E.N." , Etterbeek, Belgium

Filed Apr. 8, 1981, Ser. No. 251,840
Claims priority, application France, Apr. 8, 1980, 80 07836
Int. Cl.³ G21F 9/04; C01B 33/08
U.S. Cl. 252—631 13 Claims



1. A method for extracting fluoride ions from a nuclear fuel solution which is obtained by contacting said fuels with a mixture of HNO_3 and HF, which method comprises treating said solution with a solid phase of hydrated silica to bind at least the main portion of the fluorine to the silica, and then separating said solid phase so formed from the solution.

4,469,630

PURIFICATION OF MONOCLONAL ANTIBODIES

Michael Flashner, Easton, Pa., assignor to J. T. Baker Chemical Co., Phillipsburg, N.J.

Filed Nov. 25, 1983, Ser. No. 555,023
Int. Cl.³ C07G 7/00; A61K 39/395
U.S. Cl. 260—112 B 5 Claims

1. A method of obtaining essentially homongeneous monoclonal antibody type IgG from a sample of mouse ascites fluid containing said monoclonal antibody which comprises separating and recovering said monoclonal antibody from said sample by employing liquid chromatographic means wherein the chromatographic packing consists essentially of particulate silica gel having an average particle diameter of from about 3 to about 40 microns and an average pore size of from about 50 to about 1000 Angstrom units to which polyethylenimine functions are bound in covalently bound non-crosslinked form or in adsorbed crosslinked form.

4,469,631

FUSION PEPTIDES COMPRISING AN EXPRESSIBLE BACTERIAL GENE AND β-ENDORPHIN

John D. Baxter; Ivy Fettes, both of San Francisco, Calif., and John Shine, Curtin, Australia, assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 128,711, Mar. 10, 1980, Pat. No. 4,350,764. This application Jun. 10, 1982, Ser. No. 387,009
Int. Cl.³ C07C *103/52;* C12P *21/00*
U.S. Cl. 260—112.5 E 7 Claims

1. A fusion peptide, the synthesis of said peptide being directed by a DNA fragment consisting essentially of a DNA transfer vector having an expressible bacterial gene and having inserted therein a nucleotide sequence comprising naturally-occurring codons coding for β-endorphin or identifiable portion thereof having opiate agonist or antagonist activity, said nucleotide sequence comprising a naturally-occurring mammalian sequence coding for said β-endorphin or said identifiable portion thereof and being followed by a stop codon selected from the group consisting of TGA, TAA and TAG, said stop codon for a COOH-terminal amino acid of said β-endorphin or of said identifiable portion thereof, said nucleotide sequence being inserted in such orientation with respect to said bacterial gene that expression of said gene results in synthesis of a fusion peptide comprising said β-endorphin or said identifiable portion thereof.

4,469,632

D-ARGININE[24] CALCITONIN

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,998
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 T 4 Claims

1. Peptides having the structure:

H—CYS—SER—ASN—LEU—SER—THR—CYS—VAL—
—LEU—GLY—LYS—LEU—SER—GLN—GLU—LEU—
—HIS—LYS—LEU—GLN—THR—TYR—PRO—D-ARG—
—THR—ASN—THR—GLY—SER—GLY—THR—
—PRO—NH_2 (Salmon)

or

H—CYS—SER—ASN—LEU—SER—THR—CYS—VAL—
—LEU—GLY—LYS—LEU—SER—GLN—GLU—LEU—
—HIS—LYS—LEU—GLN—THR—TYR—PRO—D-ARG—
—THR—ASP—VAL—GLY—ALA—GLY—THR—
—PRO—NH_2 (Eel).

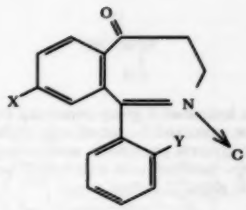
4,469,633

N-OXIDES OF 5-OXO-1-PHENYL-2-BENZAZEPINES

Eugene J. Trybulski, Parsippany, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

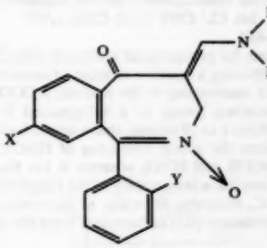
Division of Ser. No. 150,509, May 16, 1980, Pat. No. 4,318,854, and a continuation-in-part of Ser. No. 10,118, Feb. 7, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 324,292
Int. Cl.³ C07D *223/16*
U.S. Cl. 260—239 BB 2 Claims

1. A compound of the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl.

2. A compound of the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl.

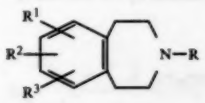
4,469,634

ALLYLOXY- AND ALLYLTHIO-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

Robert M. DeMarinis, Ardmore, Pa., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 29, 1982, Ser. No. 403,229
Int. Cl.³ C07D *223/16*
U.S. Cl. 260—239 BB 7 Claims

1. A compound of the structural formula:



in which:

R is hydrogen or a lower alkyl of 1–6 carbons; and

R^1, R^2 and R^3 are allyloxy, allylthio, halo or hydrogen, with the proviso that one of R^1, R^2 and R^3 is allyloxy or allylthio; or a pharmaceutically acceptable acid addition salt thereof.

4,469,635

POLYOL ESTERS OF ALPHA-HYDROXY CARBOXYLIC ACIDS

Donald J. Peterson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 219,718, Dec. 24, 1980, , which is a continuation-in-part of Ser. No. 124,192, Feb. 25, 1980,. This application Apr. 22, 1982, Ser. No. 370,775
Int. Cl.³ C07F *9/02, 9/10;* C11C *3/00;* A23J *7/00*
U.S. Cl. 260—403 4 Claims

1. A polyol monoester or diester of an alpha-hydroxy carboxylic acid of the formula

wherein R is a hydrocarbyl group containing from about 6 to about 20 carbon atoms and the polyol is the choline or ethanolamine ester of glycerol phosphoric acid having 0 or 1 of its hydroxyl groups esterified with a carboxylic acid containing from about 8 to about 22 carbon atoms.

4,469,636

MANUFACTURE OF ANTIMONY (III) CARBOXYLATES

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 2, 1983, Ser. No. 471,409
Int. Cl.³ C07F 9/90; C11C 1/00
U.S. Cl. 260—414 **8 Claims**

1. The process for preparing an antimony (III) Carboxylate consisting of allowing a reaction mixture of antimony metal, a carboxylic acid conforming to the formula RCOOH wherein R is A hydrocarbon group or a halogenated hydrocarbon group having from 1 to 19 carbon atoms and at least one member selected from the group consisting of HNO_3, NO_2, NO plus O_2, NOOCOR and HNO_2 wherein R has the foregoing designation to react at a temperature in the range of from about 40° C. to 120° C., removing the water of reaction and recovering the solid antimony (III) carboxylate from the mixture.

4,469,637

ELECTRO CONDUCTIVE POLYMER COMPOSITIONS AND NEW MATERIALS FOUND USEFUL IN THEIR PREPARATION

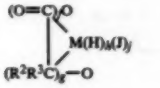
Harold Charles, West Milford, N.J., assignor to Trakka Corporation, West Mildord, N.J.

Division of Ser. No. 186,421, Sep. 12, 1980,. This application Feb. 22, 1983, Ser. No. 468,773
Int. Cl.³ C07F 7/00
U.S. Cl. 260—429.3 **4 Claims**

1. A composition of matter selected from the group consisting of a compound represented by the formula;

$$(RO)_a(R^1O)_bM(C)_c(D)_d(E)_e$$

a compound represented by the formula II;



and mixtures of said components;

wherein M is selected from the group consisting of aluminum and zirconium;

a & b are each 0,1 or 2 but a+b must equal 1 or 2;

c,d & e are each 0,1,2 or 3 but c+d must equal 3−(a+b) when M is aluminum; and c+d+e must equal 4−(a+b) when M is zirconium;

f=0 or 1;

g=1,2 or 3 but f+g equals 2 or 3;

h and j are each 0,1 or 2 but j+h=1 when M is aluminum and j+h=2 when M is zirconium;

R and R^1 are each selected from the group consisting of alkyl groups having from 1 to 12 carbon atoms, alkenyl groups having from 2 to 12 carbon atoms, and aralkyl groups having from 7 to 12 carbon atoms; R^2 and R^3 are each hydrogen or the groups of R and R^1;

C,D,E,H and J are each monovalent ligands selected from the group consisting of monosubstituted amino, disubstituted amino, trisubstituted amino, alkanols having from 1 to 18 carbon atoms, aryl alcohols having from 6 to 12 carbon atoms, alkenols having from 2 to 18 carbon atoms, and ester pyrophosphates having the generic formula;

$$—OP(O)(OR^5)OP(OR^6)(OR^7)(O)$$

wherein R^5, R^6 and R^7 are selected from the primary group consisting of alkyl groups having from 1 to 18 carbon atoms, alkenyl groups having from 2 to 18 carbon atoms, aryl groups having from 7 to 12 carbon atoms, aralkyl groups having from 7 to 12 carbon atoms; or wherein any two of said R^5, R^6 and R^7 is selected from said primary group and the remainder or R^5, R^6 and R^7 is selected from a secondary group consisting of hydrogen, an amine having the following;

$$NR^8,R^9,R^{10},R^{11}$$

wherein R^8, R^9, R^{10} and R^{11} are each selected from the group consisting of hydrogen, alkyl groups having from 1 to 12 carbon atoms, alkenyl groups having from 2 to 12 carbon atoms, and aralkyl groups having from 7 to 12 carbon atoms; and a phosphate having the formula;

$$HP(OR^{12})(OR^{13})(OR^{14})$$

wherein R^{12} is selected from the group consisting of hydrogen, alkyl groups having from 1 to 12 carbon atoms, alkenyl groups having from 2 to 12 carbon atoms and aralkyl groups having from 7 to 12 carbon atoms and R^{13} and R^{14} are each selected from the group consisting of alkyl groups having from 1 to 12 carbon atoms, alkenyl groups having from 2 to 12 carbon atoms and aralkyl groups having from 7 to 12 carbon atoms; and wherein R^{12}, R^{13}, and R^{14} may be taken together to form a ring structure bonded to HP.

4,469,638

PRODUCTION OF TRANSITION METAL COMPLEXES

Helmut Bönnemann, Essen-Ruhr, and Borislav Bogdanovic, Müilheim, both of Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,813
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205550
Int. Cl.³ C07F 15/06, 15/04, 17/00, 17/04, 7/28, 7/22
U.S. Cl. 260—439 CY **6 Claims**

1. η^5-indenylcobalt-η^5-cyclopentadienyl.

4,469,639

PREPARATION OF ORGANICALLY MODIFIED SMECTITES BY TREATMENT WITH METHYL BENZYL DIALKYL AMMONIUM HALIDE

Thomas D. Thompson, III, Bucks County, Pa.; Thomas F. Walsh, Morris County, and Frank J. Botta, Union County, both of N.J., assignors to Georgia Kaolin Company, Inc., Union, N.J.

Filed Apr. 28, 1982, Ser. No. 372,498
Int. Cl.³ C07F 5/06
U.S. Cl. 260—448 C **23 Claims**

1. A method of preparing an organically modified smectite comprising:

(a) adding an unfractionated pulverized smectite crude directly to an aqueous dispersion of a methyl benzyl dialkyl ammonium halide salt at a treatment level in the range of 55 to 70 milliequivalents of methyl benzyl dialkyl ammonium halide per one hundred grams of smectite; and

(b) blending the smectite crude and methyl benzyl dialkyl ammonium halide mixture at moderate shear to permit the methyl benzyl dialkyl ammonium halide and smectite to react via cation exchange.

4,469,640

CATALYTIC CONVERSION OF FORMAMIDES TO ISOCYANATES

Peter F. Carcia, Wilmington, Del.; George E. Heinsohn, Elkton, Md., and Velliyur N. M. Rao, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 14, 1983, Ser. No. 475,032

Int. Cl.³ C07C *118/00*

U.S. Cl. 260—453 P **5 Claims**

1. A process for preparing an isocyanate corresponding to the formula

$$R(NCO)_n$$

where R is an unsubstituted alkyl group, cycloalkyl group, aryl group, aralkyl group or alkaryl group containing not more than 18 carbon atoms, or one of said groups substituted with chlorine, fluorine, cyanogen, alkyl carbonyl or alkoxy carbonyl containing not more than 10 carbon atoms in the alkyl or alkoxy group and n is 1 or 2 which (a) comprises contacting an N-monosubstituted formamide corresponding to the formula

$$R(N(H)-CH=O)_n$$

where R and n are defined as above in the gas phase with an oxygen-containing gas in the presence of a catalyst formed of a particulate, hard nonporous refractory support on which has been deposited by physical vapor deposition from 0.5–50% by weight silver, or a silver/gold alloy.

4,469,641

OMEGA-FLUOROSULFATO-PERFLUORO-(2-METHYL-ALKAN-3-ONES)

Hans Millauer, Eschborn; Werner Schwertfeger, Butzbach, and Günter Siegemund, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 300,917, Sep. 10, 1981, abandoned. This application May 20, 1983, Ser. No. 496,628

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034499

Int. Cl.³ C07C *141/00*

U.S. Cl. 260—458 F **3 Claims**

1. An ω-fluorosulfato-perfluoro-(2-methyl-alkan-3-one) of the formula

$$FSO_2O-(CF_2)_m-C(=O)-CF(CF_3)_2,$$

wherein m is 1 to 10.

4,469,642

CONDENSATION OF RING-SUBSTITUTED PHENYLACETONITRILES WITH MONO-ESTERS OF DICARBOXYLIC ACIDS

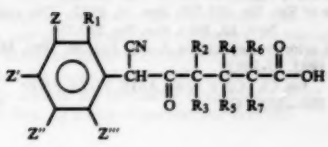
Robert C. Ligon, Raleigh, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1983, Ser. No. 480,726

Int. Cl.³ C07C *121/76*

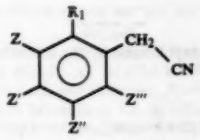
U.S. Cl. 260—465 D **10 Claims**

1. A method of preparing a compound of the formula:



which comprises:

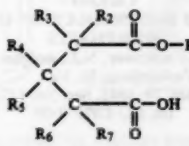
reacting a compound of the formula



wherein

Z, Z', Z'' and Z''' are individually hydrogen, nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl, amido, amino, or haloalkyl; and R_1 is alkyl, halogen, polyhaloalkyl, or haloalkyl;

with a compound of the formula:



wherein

R_2, R_3, R_4, R_5, R_6 and R_7 are individually hydrogen or either substituted or unsubstituted alkyl or phenyl wherein the permissible substituents are one or more alkyl, cyano, halogen, nitro, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, or dialkylamino substituents or any two R_2, R_3, R_4, R_5, R_6 or R_7 substituents together may form an alkylene or alkenylene chain having from 2 to 20 carbon atoms completing a 3, 4, 5, 6 or 7 membered ring structure;

with the proviso that R_1, R_2, R_3, R_4, R_5, R_6, R_7, Z, Z', Z'' and Z''' substituents individually may not include more than ten aliphatic carbon atoms; and R_8 is substituted or unsubstituted alkyl;

in the presence of a base and a non-protic solvent.

4,469,643

PHOSPHORUS-CONTAINING COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

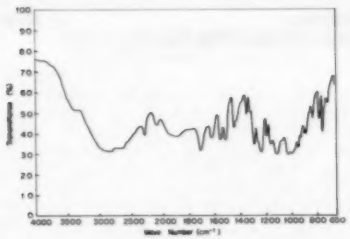
Takashi Tsuruoka, Kawasaki; Satoshi Imai, Yokohama; Atsuyuki Satoh, Yokohama; Tetsuro Watanabe, Yokohama; Koji Watanabe, Machida; Shigeharu Inouye, and Taro Niida, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Division of Ser. No. 388,209, Jun. 14, 1982,. This application Nov. 10, 1983, Ser. No. 550,750

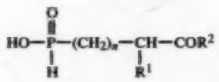
Claims priority, application Japan, Jun. 30, 1981, 56-100566; Feb. 26, 1982, 57-28925

Int. Cl.³ C07F 9/48; A61K 31/13, 31/66

U.S. Cl. 260—502.5 G 5 Claims



1. Compounds represented by the following formula:



wherein n is an integer of 1 or 2; R^1 is an amino group when n is 2, or an animo group or a hydroxyl group when n is 1; and R^2 is a hydroxyl group.

4,469,644

PROCESS FOR THE PRODUCTION OF TRIARYL PHOSPHATES

Eugene P. DiBella, Piscataway, N.J., assignor to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Sep. 29, 1982, Ser. No. 427,409

Int. Cl.³ C07F 9/09

U.S. Cl. 260—985 8 Claims

1. The process for the production of triaryl phosphates that comprises contacting a triaryl phosphite having the structural formula

wherein R^1, R^2, and R^3 each represent phenyl, alkylphenyl, halophenyl, or nitrophenyl with an oxygen-containing gas in the presence of a catalyst that comprises in combination (1) iodine or bromine, and (2) an oxide or soluble salt of iron, cerium, copper, manganese or thorium at a temperature in the range of 10° C. to 200° C.

4,469,645

PRODUCTION OF TRANSPARENT GLOBULES

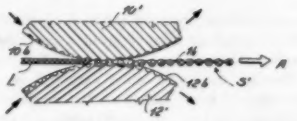
Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Continuation of Ser. No. 59,045, Jul. 19, 1979, abandoned, which is a continuation of Ser. No. 855,283, Nov. 28, 1977, abandoned, which is a division of Ser. No. 705,596, Jul. 15, 1976, Pat. No. 4,072,402. This application Sep. 29, 1982, Ser. No. 427,268

Claims priority, application Italy, Jul. 16, 1975, 25456 A/75; Jun. 9, 1976, 24096 A/76; Jul. 6, 1976, 25067 A/76

Int. Cl.³ B29D 11/00; B29C 17/00

U.S. Cl. 264—1.6 3 Claims



1. A method of producing transparent globules for a composite retro-reflective system for pavement marking, comprising the steps of forcedly calendering a heated sheet of thermoplastic transparent polymeric material and having a predetermined thickness through the nip of a pair of forming cylinders respectively rotating in opposite directions and in phase alignment with each other and each provided on the peripheral surface thereof with a plurality of concavely curved forming recesses uniformly spaced from each other, said recesses in the peripheral surface of one of said cylinders being shallower than the recesses in the peripheral surface of the other cylinder so as to produce an essentially planar sheet-like intermediate product having opposite faces from which bulging portions project which are aligned in pairs and formed in accordance with said recesses; attaching and securing a monolayer of transparent microspheres to one of said faces of said intermediate product; breaking said sheet-like product intermediate said pairwise aligned bulging portions to produce a plurality of separate globules; and removing from said separate globules any parts of said broken product withc may still be connected to said globules by passing said separate globules between two concentric disks, at least one of which rotates relative to the other.

4,469,646

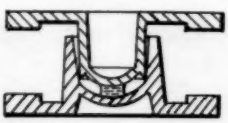
METHOD OF MOLDING PLASTIC CONTACT LENSES

David L. Rawlings, 33 E. Slope Rd., Bayville, N.Y. 11709

Filed Aug. 9, 1982, Ser. No. 406,503

Int. Cl.³ B29D 11/00

U.S. Cl. 264—2.2 7 Claims



2. A process for casting a contact lens from a polymerizable lens-forming mixture in a closed mold system which includes:

(i) a male mold portion including a substantially cylindrical support having a principal longitudinal axis and a base curve molding surface attached circumferentially to the cylinder support, the base curve molding surface having a predetermined curvature to form the base curve surface of the resulting contact lens;

(ii) a flexible, thermoplastic female portion comprising a hollow cylindrical portion having a principal longitudinal axis and having an open upper end and a closed lower end, the internal diameter of the female cylinder portion being sufficiently greater than the external diameter of the male support portion to allow the male support member to be

insert therein, the female portion being circumferentially closed at the lower end thereof by an intergral optical curve molding surface having a curvature to form the optical curve surface of the resulting contact lens; and

(iii) an intergral rim portion flexible inwardly towards the axis of both of the molding surfaces attached circumferentially to, and integral with, one of the molding surfaces and having an axis common with the principal longitudinal axis of the mold portion;

said process including the sequential steps of:

(a) charging a flowable, polymerizable lens-forming material onto the molding surface of the female portion of the mold;

(b) aligning the two mold portions then inserting the male mold portion until the molding surface contacts the surface of the lens-forming material retained in th female portion of the mold;

(c) withdrawing the male mold portion slowly away from the female portion thereby causing the flowable lens-forming material between the two molding surfaces to withdraw to the center of the molding surfaces of the two mold portions and form a column substantially about the principal longitudinal axis of each of the mold portions;

(d) closing the mold by slidably engaging the cylindrical portion of the female portion and seating the flexible rim circumferentially on the opposite molding surface thereby displacing any air present from between the two molding surfaces while distributing the retaining the lens-forming material between the molding surfaces and the flexible rim portion to form a totally enclosed space therebetween substantially completely devoid of air;

(e) applying pressure to the closed mold of step (d) to urge the molding surfaces towards each other and cause the rim portion to flex inwardly in a uniform manner with respect to the principal longitudinal axis of each of the mold portions;

(f) subjecting the closed mold to polymerization conditions causing the lens-forming material to polymerize; and

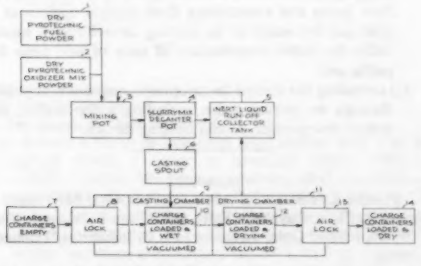
(g) removing the thus molded contact lens from the mold.

4,469,647

METHOD AND APPARATUS FOR MIXING, CASTING AND DISPENSING FRICTION-SENSITIVE PYROTECHNIC MATERIALS

Spencer J. Speer, Ontario, Calif., assignor to General Dynamics, Pomona, Calif.

Filed Mar. 24, 1983, Ser. No. 478,439
Int. Cl.³ C06B *21/00*
U.S. Cl. 264—3 C **10 Claims**



1. A method of mixing, blending and dispensing pyrotechnic materials comprising the steps of:

separately applying a selected dry pyrotechnic fuel powder and a selected dry pyrotechnic oxidizer powder into a container of an inert liquid medium comprising a blend of trichlorotrifluoroethane and ethyl alcohol in volumes sufficient to thoroughly wet the materials until a ratio of about 1 part of pyrotechnic materials to 3 parts of the liquid medium is reached;

blending the resulting contents of the container to maintain a substantially homogenous mixture of the ingredients therein;

decanting off an amount of the inert liquid medium from said mixture so as to leave a slurry of the pyrotechnic materials with the remaining inert liquid medium;

dispensing the slurry into final containers; and

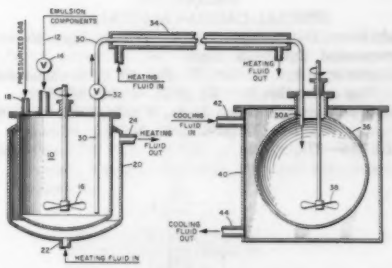
drying said slurry in said final containers in a vacuum within the range of about 600–700 mm. Hg. at a temperature within the range of about 100°–130° F. so as to substantially remove the remainder of said inert liquid medium, thus forming a cast of pyrotechnic material.

4,469,648

PROCESS FOR PREPARING SPHEROIDALLY SHAPED PRODUCTS, SOLID AT ROOM TEMPERATURE

Mario Ferraris, Novara, and Francesco Rosati, Milan, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 236,062, Feb. 19, 1981, abandoned, which is a continuation of Ser. No. 47,908, Jun. 12, 1979, abandoned. This application Nov. 18, 1982, Ser. No. 442,673
Claims priority, application Italy, Jun. 13, 1978, 24509 A/78
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—9 **6 Claims**



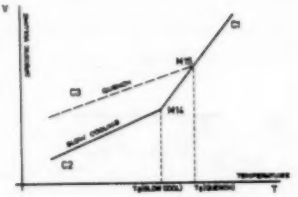
1. Process for converting a molten product into a spheroidally shaped product solid at room temperature and having a diameter of from 1 to 5,000 microns, said molten product being selected from the group consisting of organic and inorganic compounds having a melting point comprised between 20° C. and 400° C., which process comprises forming a uniform mixture of the molten product with at least one liquid immiscible therewith and chemically inert thereto, and in a ratio such that the molten product will form a continuous phase, emulsifying the mixture by passing it under turbulence in a tube having a length greater than 50–100 times the inner diameter thereof and which latter is at least 3–4 times the maximum diameter of the spheroidal particles to be obtained, to produce an emulsion, quenching the emulsion by mixing it with an inert liquid at a temperature to solidify the molten liquid dispersed in the emulsion, and recovering the resulting solid spheroidal particles.

4,469,649

METHOD AND APPARATUS FOR TRANSFORMING THE PHYSICAL CHARACTERISTICS OF A MATERIAL BY CONTROLLING THE INFLUENCE OF RHEOLOGICAL PARAMETERS

Jean-Pierre Ibar, Avenue de la Division Leclerc, Ballainvilliers (Essone), France (91160)

Continuation-in-part of Ser. No. 129,767, Mar. 12, 1980, abandoned. This application Jul. 28, 1971, Ser. No. 287,673
Claims priority, application France, Mar. 14, 1979, 79 06532; Feb. 6, 1980, 80 02620; Feb. 26, 1980, 80 04252
Int. Cl.³ B29F 3/00
U.S. Cl. 264—23 16 Claims



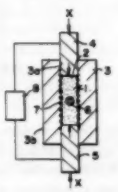
1. A method for modifying the physical and physicochemical characteristics of a material which comprises controlling the rate of a rate sensitive change of physical state of the material from an equilibrium state to a non-equilibrium state by simultaneously varying as a function of time at least two rheological parameters, the rates of change of said rheological parameters with time being controlled in accordance with a predetermined relationship to achieve an end product of prescribed physical and/or physicochemical characteristics, wherein at least one of the rheological parameters is mechanical vibration, shear stress, hydrostatic pressure, dielectric vibration for dielectric materials or electromagnetic vibration for metallic materials.

4,469,650

SPECIAL CARBON MATERIAL

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation of Ser. No. 348,237, Feb. 12, 1982, abandoned. This application Nov. 10, 1983, Ser. No. 550,984
Claims priority, application Japan, Feb. 16, 1981, 56-20185
Int. Cl.³ B29C 3/00, 11/00
U.S. Cl. 264—27 9 Claims



1. A method of forming a shaped carbon material, comprising the steps of:

disposing a uniform body consisting of graphite carbon of a preselected shape and dimension in a collapsible receptacle so shaped and dimensioned as to tightly retain said body therein, said receptacle being collapsible at least one-dimensionally under an elevated external pressure while holding the body against expansion;

pressurizing said receptacle externally thereof in the mutually opposite directions along at least one of three mutually orthogonal axes (X, Y, Z) to establish said elevated pressure sufficient to collapse and reduce the volume of said receptacle wholly occupied by said body, thereby compressing said body in said directions without consequential substantial dimensional increase in any other direction;

heating said body tightly retained in and being compressed by said collapsing receptacle under said elevated external pressure at a temperature and for a time period which are sufficient to selectively liquefy in a substantially spherical form at least one discrete region internally located of said uniform graphite carbon body and to sinter the remainder thereof; and

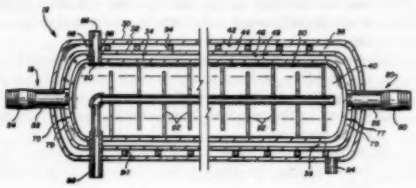
subsequently, solidifying said liquefied region while leaving a sintered matrix therearound of said body by cooling said heated body while said body continues under said external pressure in said receptacle.

4,469,651

PROCESS FOR EXTRUDING THERMOPLASTIC COMPOSITIONS

Granville J. Hahn, and Raleigh N. Rutledge, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 298,362, Sep. 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 110,528, Jan. 9, 1980, abandoned. This application May 16, 1983, Ser. No. 494,605
Int. Cl.³ B29D 27/00
U.S. Cl. 264—40.6 22 Claims



1. A process for extruding thermoplastic resinous compositions, comprising the steps of:

(a) heat plastifying the thermoplastic resinous composition in an extruder and forwarding same in an extrusion direction;

(b) cooling the heat plastified thermoplastic resinous composition exiting from the extruder to a uniform temperature desired for extrusion through an extrusion die, said cooling step including conveying the heat plastified thermoplastic resinous composition through at least one enclosed flow path in a cooling device, circulating a cooling medium about the entire circumference of each of the resin flow paths and maintaining flow control orifices at the inlet and the outlet of the cooling device across substantially the entire cross-section of each of said resin flow paths; and

(c) extruding the cooled thermoplastic resinous composition through an extrusion die, including a die orifice, positioned downstream of said cooling device.

4,469,652

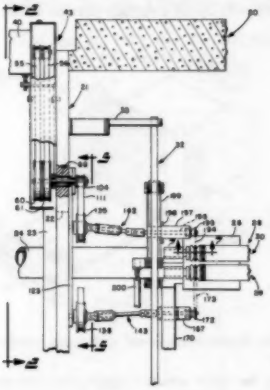
FOAM EXTRUSION APPARATUS AND METHOD

James R. Cisar, Cuyahoga Falls, and Kilian K. Mendel, Wadsworth, both of Ohio, assignors to U.C. Industries, Tallmadge, Ohio

Filed Sep. 20, 1982, Ser. No. 420,262
Int. Cl.³ B29D 27/00
U.S. Cl. 264—40.7 51 Claims

1. In a vacuum foam extrusion process including a sealed chamber into which the foam is extruded, the steps of providing driven shaping rolls for the extrudate within the chamber, rotatably supporting the shaping rolls interiorly of the cham-

ber, sealing the chamber with a bulkhead, and driving the shaping rolls from outside the sealed chamber through a transmission extending through the bulkhead from the exterior to the interior of the sealed chamber.



4,469,653

PROCESS FOR THE PREPARATION OF MOLDED PARTS OF POLYURETHANE OR POLYURETHANE-POLYUREA EMPLOYING MONOCYCLIC AMIDINES

Dietmar Nissen, Heidelberg, and Eckhard Hickmann, Dannstadt-Schauernheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

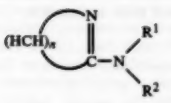
Filed Jun. 28, 1982, Ser. No. 393,052

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126436

Int. Cl.³ B29D *27/00*; **C08G** *18/20*; **C08J** *9/04*; **C08K** *5/34*

U.S. Cl. 264—51 **10 Claims**

1. In a process for the preparation of molded parts of polyurethane-polyurea reacting an organic aromatic polyisocyanate, a polyol and a chain extender in the presence of a catalyst, optionally in the presence of blowing agents, auxiliaries and additives, the improvement comprising employing as catalyst a monocyclic amidine having the formula



wherein

R^1 is hydrogen or R^2;

n represents a whole number from 3 to 12,

R^2 denotes a linear or branched alkyl radical with 1 to 20 carbon atoms, a linear or branched OH—, NH_2—, —NH— and/or SH-group-containing alkyl radical having 1 to 20 carbon atoms, a cycloalkyl radical with 5 to 12 carbon atoms, in which one or more methylene groups may be substituted by —O—, —S—, —NH—, —CO-bridge members, a cycloalkyl radical with 5 to 12 carbon atoms substituted with linear or branched alkyl groups with 1 to 6 carbon atoms, a cyclohexyl radical, —OH—, $—NH_2$— or —SH— groups wherein one or more methylene groups can be substituted by —OH—, —S—, or —NH-members, an aromatic radical with 6 to 15 carbon atoms, an aromatic radical with 6 to 15 carbon atoms substituted with linear or branched alkyl groups with 1 to 6 carbon atoms, —OH—, $—NH_2$—, $—NHCH_3$—, $—N(CH_3)_2$— or —SH-groups, an aralkyl radical having 7 to 11 carbon atoms wherein the radicals R^1 and R^2 are the same or different or wherein together form a ring with 4 to 12 carbon atoms in which one or more methylene groups may be substituted by —O—, —S—, —NH—, —CO-bridge members, and which optionally contain linear or branched alkyl radicals having 1 to 6 carbon atoms, or carboxylic acid ester groups in bonded form as substituents.

4,469,654

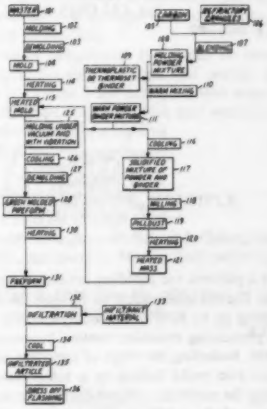
EDM ELECTRODES

Thomas E. Haskett, Oakdale, and Joseph J. Schmitt, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 119,164, Feb. 6, 1980, Pat. No. 4,373,127. This application Sep. 29, 1982, Ser. No. 428,146

Int. Cl.³ B32B *9/06*

U.S. Cl. 264—62 **4 Claims**



1. A process for forming an electrical discharge machining electrode, comprising the steps of:

(a) dry blending granules of carbon and granules of a refractory selected from the group consisting of tungsten, molybdenum, carbides of either, and stoichiometric and hyperstoichiometric carbides of the other elements of groups IVB, VB, and VIB of the Periodic Table of the Elements, said granules being combined according to the relationship

$$\frac{(\text{volume \% } C)(\text{surface area } C)}{(\text{volume \% } R)(\text{surface area } R)} < \text{about } 75$$

wherein C is said carbon, R is said refractory, the volume percent terms are the fraction of said electrode occupied by C or R, and the surface area terms are the surface areas in m^2/g of said carbon or refractory granules measured before said carbon or refractory granules are blended together, thereby forming a uniform mixture;

(b) warm mixing said granules with up to 62 volume percent of a thermoplastic or thermoset, heat fugitive, organic binder;

(c) molding the resulting mixture in a heated flexible mold, cooling said mold and its contents to room temperature, and demolding said contents thereby forming an essentially void-free green molded preform having the size and shape of said mold; and

(d) heating said green molded preform to thermally degrade and remove the bulk of said binder, thereby forming a rigid, handleable, skeletal preform;

(e) placing said preform in contact with an infiltrant comprising copper, silver, or alloys containing copper or silver and heating said preform and said infiltrant above the melting point of said infiltrant at ambient pressure, whereby said infiltrant melts and wicks into the connected porosity of said preform by capillary action, and wherein the volume percent of said carbon, said refractory, and said infiltrant are on or within the boundaries DEFG of FIG. 7; and

(f) cooling the infiltrated part to room temperature.

4,469,655

PROCESS AND APPARATUS FOR MOULDING ARTICLES FROM BINDER-CONTAINING ORGANIC FIBROUS MATS

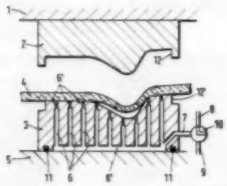
Günter H. Kiss, Gustav-Freytag-Strasse 7, D-1000 Berlin 33, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,408

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3141064; Sep. 3, 1982, 3233241

Int. Cl.³ C04B *14/15*

U.S. Cl. 264—82 **15 Claims**



1. In a process for molding articles from binder-containing organic fibrous mats, such as lignocellulose or the like, and containing up to 50% of thermally curable binder and having a final processing moisture content between approximately 15 and 25%, including the steps of exposing one said fibrous mat between two mold halves to a temperature above 100° C., reducing the moisture content during the molding process to a minimum of about 8%, and compressing the fibrous mat in a single mold stroke, the improvement comprising

maintaining said fibrous mat between the closed mold halves, only during a minimum curing time of the added binder, the processing moisture content thereof, with said mold halves being steam tight and defining between them an article volume,

accumulating the steam resulting from the processing moisture in an additional buffer volume connected to the molded article volume, and

reducing the moisture content of said fibrous mat to the final moisture content by suddenly releasing the buffer volume.

4,469,656

METHOD FOR FORMING EMBOSSED ACOUSTICAL TILE

Yasuo Ishii, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Apr. 24, 1981, Ser. No. 257,066

Int. Cl.³ B28B *1/26*

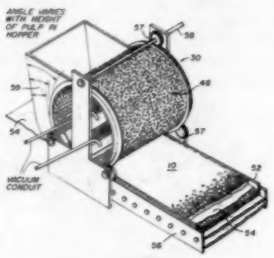
U.S. Cl. 264—87 **8 Claims**

1. A method for forming an embossed acoustical tile having a three-dimensional pattern effect within the tile surface, by having portions thereof being raised and portions thereof being in relief, comprising the steps of:

(a) forming a deformable aqueous pulp of mineral fiber composition suitable for forming an acoustical tile;

(b) contacting the pulp with a hollow embossing roll, said roll having a discontinuous, reverse three-dimensional pattern within the surface of the roll and having interstices within the pattern communicating with the hollow interior of the roll;

(c) pressing the roll against the deformable pulp with sufficient force as to dispel a surface portion of the pulp reproducing the three-dimensional embossed pattern upon the pulp; and



(d) releasing the pulp which contains the embossed pattern from the surface of the roll by rotation of the roll.

4,469,657

RIM ELASTOMERS WITH IMPROVED CATALYST EFFICIENCY

Richard J. G. Dominguez, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 119,705, Feb. 8, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 416,825

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—328.6 **20 Claims**

1. In a method for making a reaction injection molded polyurethane elastomer wherein a high molecular weight polyhydric polyether, a low molecular weight active hydrogen containing compound of at least two functionality and a polyisocyanate are reacted in the presence of a single tin catalyst or mixture of tin catalysts and wherein these ingredients are separated into two components prior to reaction and wherein one component contains all of the polyisocyanate the improvement which comprises

mixing all of the tin catalyst or mixture of tin catalysts with the polyisocyanate component prior to reaction.

4,469,658

SINTERED SILICON CARBIDE MATERIALS HAVING METALLIZED SURFACE AND PROCESS FOR PRODUCING THE SAME

Yukihiro Kimura, and Shunkichi Nozaki, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Dec. 22, 1981, Ser. No. 333,507

Claims priority, application Japan, Dec. 24, 1980, 55-184793

Int. Cl.³ B22F *3/10, 7/00*

U.S. Cl. 419—9 **2 Claims**

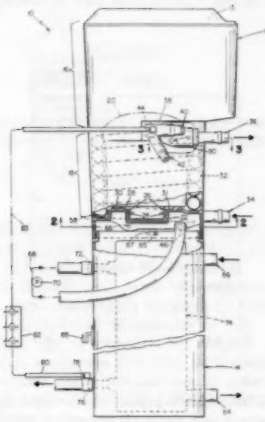
1. A process for producing silicon carbide sintered materials having a metallized surface which comprises applying a paste of a powder comprising 10 to 90% by weight of Si, balance a mixture of at least two components selected from Fe, Ni and Co to a sintered silicon carbide material and sintering at a temperature of 1100° to 1800° C. in a non-oxidative atmosphere.

4,469,659

SAMPLING DEVICE FOR BLOOD OXYGENATOR

Gary A. Carson, Evergreen, and Roger J. Elgas, Littleton, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Apr. 26, 1982, Ser. No. 371,974
Int. Cl.³ A61M 1/03
U.S. Cl. 422—46 5 Claims



1. Blood oxygenating apparatus comprising

means for continuously heating and oxygenating blood,

said means including a blood inlet port, a blood outlet port for returning oxygenated blood to the patient via a patient return line, a mass transfer device, and means to remove air bubbles introduced into said blood inlet port,

a sample supply line connected to said outlet port and having a diameter smaller than that of said patient return line and adapted to have a smaller flow through it than that through said patient return line,

a sampling access device having an inlet connected to said sample supply line, a sampling port providing access for removal of blood flowing through said device, and an outlet port permitting continuous flow through said sampling device,

a sample return line connected between said sampling device and said blood inlet port, and

pumping means to cause the blood at said outlet port to have sufficient pressure to flow through said supply line, sampling device, and return line,

said mass transfer device and said means to remove air bubbles including a membrane type fluid flow transfer device having an inflow port communicating with upper ends of channels defined by microporous membranes and an outlet port communicating with lower ends of said channels to result in downward flowing blood between microporous membranes within said membrane mass transfer device to detain bubbles introduced into said membrane device, and said pumping means maintaining the pressure on the blood side of said membranes sufficiently above that on said air side to cause substantially all accidentally introduced air bubbles to pass completely through said microporous membranes before being carried to the blood outlet port by the flow of blood.

5. Blood oxygenating apparatus comprising,

means for continuously heating and oxygenating blood,

said means including a blood inlet port, a blood outlet port for returning oxygenated blood to the patient via a patient return line, and means to remove air bubbles introduced into said blood inlet port,

said blood inlet port being a port for receiving venous blood from a patient,

a sample supply line connected to said blood outlet port and having a diameter smaller than that of said patient return line and adapted to have a smaller flow through it than that through said patient return line,

a sampling access device having an inlet connected to said sample supply line, a sampling port providing access for removal of blood flowing through said device, an outlet port permitting continuous flow through said sampling device,

a sample return line connected between said sampling device and said blood inlet port,

said sampling access device including valve means to block flow to said sampling port from said supply line to permit removal of samples from said blood inlet port through said sample return line,

said sample supply line, said sampling access device, and said sample return line comprising a single recirculation line between said outlet port and said inlet port, and

pumping means to cause the blood at said outlet port to have sufficient pressure to flow through said supply line, sampling device, and return line,

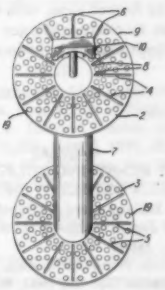
whereby samples of oxygenated blood can be removed from said blood flowing through said access device when said valve means is not activated, and samples of venous blood can be removed from said access device when said valve means is activated.

4,469,660

RACK FOR DEVELOPING MULTIPLE CHROMATOGRAMS

Donald W. Jones, Palm Springs, and Michael J. Gabor, Mission Viejo, both of Calif., assignors to Marion Laboratories, Kansas City, Mo.

Filed Mar. 5, 1982, Ser. No. 354,159
Int. Cl.³ G01N 31/08
U.S. Cl. 422—70 8 Claims



1. A rack for supporting a plurality of chromatograms in a developing tank comprising:

flat thin upper and lower members, said members having a shape and size such that they fit closely into the developing tank without touching the tank's walls; said members being attached to one another by attachment means which hold the members apart a distance which is less than the length of the chromatograms but at least as long as the migratory region of the chromatograms; said upper member being provided with a plurality of spaced slits which are of a size sufficient to loosely receive a chromatogram, each upper slit positioned such that its ends are equidistant from a solid vertical wall member when the rack is in the developing tank; said lower member being provided with the same number of slits as said upper member, said lower slits being of a size sufficient to loosely receive and sup-

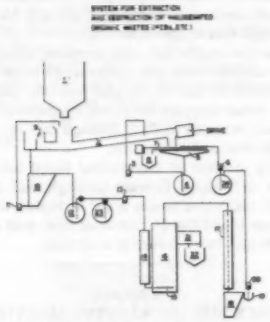
port the lower end of the chromatograms and being positioned below and in line with said upper slits.

4,469,661

DESTRUCTION OF POLYCHLORINATED BIPHENYLS AND OTHER HAZARDOUS HALOGENATED HYDROCARBONS

Clifford G. Shultz, 1701 Glendale, Evansville, Ind. 47712

Filed Apr. 6, 1982, Ser. No. 346,636
Int. Cl.[3] B01D *53/34*
U.S. Cl. 423—210.5 7 Claims



1. A process for destroying hazardous halogenated hydrocarbon, said process comprising the steps of

(a) treating solids contaminated with hazardous halogenated hydrocarbon to extract hazardous halogenated hydrocarbon therefrom and produce a liquid containing said hazardous halogenated hydrocarbon,

(b) vaporizing liquid formed in step (a),

(c) contacting the formed vapor with molten metal comprising aluminum to remove halogen from said hazardous halogenated hydrocarbon and leave a slag.

4,469,662

METHOD OF REMOVING SULFUR OXIDES AND NITROGEN OXIDES BY DRY PROCESS

Takeshi Hamada, Ichikawa, and Yoshinobu Komatsubara, Kitakyushu, both of Japan, assignors to Mitsui Mining Company Limited, Tokyo, Japan

Continuation of Ser. No. 412,976, Aug. 27, 1982, abandoned.
This application Dec. 22, 1983, Ser. No. 564,362
Claims priority, application Japan, Sep. 10, 1981, 56-141703
Int. Cl.[3] C01B *21/00, 17/00;* C01C *3/00;* B01J *8/00*
U.S. Cl. 423—235 9 Claims

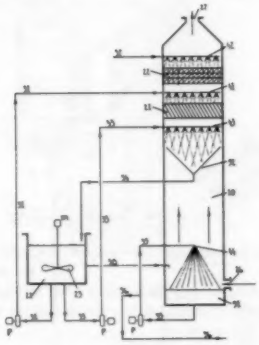
1. A method of removing sulfur and nitrogen oxides from waste gases which comprises passing transversely a waste gas through a first carbonaceous adsorbent bed moving vertically, in which the most part of SOx is removed, adding ammonia in an excessive amount to the waste gas leaving the first bed, passing the waste gas through a second carbonaceous adsorbent bed moving vertically in parallel to the first bed as to the flow of carbonaceous adsorbent, in which the residual SOx is removed and NOx is decomposed and removed, then passing the waste gas leaving the second bed and containing unreacted ammonia through a third bed of a part or all of the carbonaceous adsorbent moving vertically from the first bed, in which the unreacted ammonia is removed, and regenerating and reusing the carbonaceous adsorbent from the first bed.

4,469,663

SCALE CONTROL IN FLUE GAS DESULFURIZATION

Druce K. Crump, Lake Jackson; David A. Wilson, Richwood, and Gary D. Gatton, Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

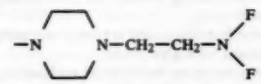
Filed Oct. 15, 1982, Ser. No. 434,676
Int. Cl.[3] C01B *17/00;* C02F *5/10*
U.S. Cl. 423—242 8 Claims



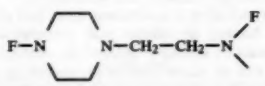
1. In a process of gas desulfurization wherein a hot gas containing sulfur oxides is passed into a vapor-liquid contacting column where said gas is (1) quenched in a first stage by contacting said gas with an aqueous solution or slurry containing a calcium compound which will react with said sulfur oxides, (2) further contacted at a temperature of up to about 70° C. in one or more stages with additional said solution or slurry to react with substantially all remaining said sulfur oxides, and (3) heating said solution or slurry from step 2 to a temperature of above about 70° C. to precipitate the reaction product of said sulfur oxides with said calcium compounds the improvement which comprises adding to said aqueous contacting solution or slurry a threshold agent having the formula

$$A—BA)_m$$

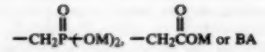
wherein A is an organic radical having the formula



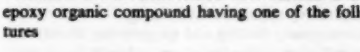
or



wherein F is hydrogen, hydroxyethyl, hydroxypropyl,



wherein M is hydrogen, an alkali metal or ammonium, and wherein B is a divalent radical derived from a dihalo or haloepoxy organic compound having one of the following structures



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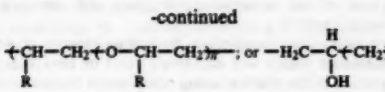


and wherein n is 1 to 10; n' is 1 to 3; R is hydrogen or methyl; and m is 1 to 10 and at least 50% of the F groups are

which will inhibit the formation of scale at the lower temperature of step 2, but permit its precipitation at a higher temperature.

4,469,664

METHOD FOR REDUCING THE CONCENTRATION OF SULFUR COMPOUNDS IN A SYSTEM FOR CALCINING FINE GRAINED MATERIALS

Andris Abelitis, Rösrath, and Jakob Hinterkeuser, Augustin, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 484,980

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1982, 3215793

Int. Cl.[3] **B01J** *8/00;* **C01B** *17/00;* **C04B** *7/02;* **F27B** *15/00*

U.S. Cl. 423—244 **5 Claims**

1. A method for reducing the amount of sulfur compounds in circulation or SO_2 emissions or both in a system for calcining fine grained material in the manufacture of cement comprising, in sequence,

preheating said fine grained material in at least one preheating stage,

pre-calcining the preheated material in at least one pre-calcining stage to produce a meal containing SO_3,

calcining and sintering the pre-calcined meal in a final sintering stage,

withdrawing an exhaust gas containing SO_2 from said sintering stage,

sensing the amount of SO_2 contained in said exhaust gas,

mixing the withdrawn exhaust gas with a dust containing an alkaline earth compound capable of bonding sulfur in a reaction stage and reacting said gas with said dust in an amount determined by the amount of SO_2 sensed in said exhaust gas or the SO_3 content of said pre-calcined meal, or both,

cooling the thus treated exhaust gas,

separating the purified gas from the remaining sulfur containing solids, and

at least partially recirculating the dust remaining from separation of the sulfur containing gases and sulfur containing solids back into said reactor stage.

4,469,665

PRODUCTION OF AMMONIA FROM PURIFIED AMMONIA SYNTHESIS GAS

Alwyn Pinto, Middlesbrough, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 214,793, Dec. 9, 1980,. This application Dec. 10, 1982, Ser. No. 448,475

Claims priority, application United Kingdom, Dec. 19, 1979, 7943634

Int. Cl.[3] **C01C** *1/04*

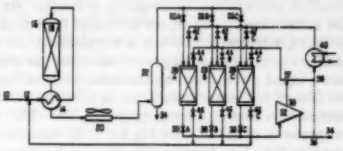
U.S. Cl. 423—359 **1 Claim**

1. In a process for producing ammonia by ammonia synthesis gas generation by catalytic primary reforming of desulphurised hydrocarbons with steam secondary reforming with air of the product of primary reforming whereby to introduce nitrogen, catalytic shift reaction of carbon monoxide with steam, cooling and steam removal, carbon dioxide removal in an absorbent liquid, carbon oxides removal by catalytic methanation and final removal of residual water vapour and carbon dioxide, followed by catalytic ammonia synthesis from the synthesis gas; the improvement wherein such ammonia synthesis is at a pressure in the range 50–120 bar Abs., by which such residual water vapour and carbon dioxide are removed more efficiently than by conventional contacting with the liquid ammonia product of the process, which comprises

(a) cooling the product of methanation to below its dew-point;

(b) separating water from it;

(c) passing the water-depleted gas containing residual carbon dioxide through a charge of solid absorbent absorbing water vapour and carbon dioxide while leaving nitrogen



unabsorbed until the absorbent is loaded with said water and carbon dioxide and then switching the gas flow to pass through a fresh or regenerated charge of absorbent;

(d) separating a part stream of gas downstream of step (c) and passing it through a loaded charge of absorbent whereby to regenerate the absorbent and produce a regeneration gas stream containing water vapour and carbon dioxide;

(e) recycling said regeneration gas stream into the process between said carbon dioxide removal and said methanation, whereby carbon dioxide in said gas is converted to methane, water vapour is removed in separation step (b) and synthesis gas contained therein is re-united with the main synthesis gas stream.

4,469,666

CATALYST UNITS FOR PRODUCING HYDROCYANIC ACID

David J. Stephenson, Sharnwood; Alan E. Heywood, St. Albans, and Gordon L. Selman, Reading, all of England, assignors to Johnson Matthey & Co., Limited, London, England

Division of Ser. No. 204,380, Nov. 5, 1980, abandoned. This application May 10, 1982, Ser. No. 376,501

Claims priority, application United Kingdom, Nov. 8, 1979, 7938722

Int. Cl.[3] **C01C** *3/02*

U.S. Cl. 423—376 **4 Claims**

1. In a process for the preparation of HCN by passing NH_3 and CH_4 through a catalyst, the improvement which comprises using, as the catalyst, a catalyst unit comprising a pack of woven metallic gauzes having a front where the NH_3 and CH_4 enter and a rear where the reaction mixture exits the catalyst, the gauzes disposed at the front of the pack where the NH_3 and CH_4 enter the catalyst being made from wire having a cross-sectional area greater than the gauzes disposed at the rear of the pack where the reaction mixture exits, the wire being composed of a platinum group metal, an alloy of platinum group metals or an alloy of at least one platinum group metal with at least one non-platinum group metal wherein the platinum group metal component is at least 90% by weight of the total metal content, the pack being divided into a plurality of stages, each individual stage including a plurality of gauzes made from wire of the same cross-sectional area and wherein the cross-sectional area of the wire of the gauzes in any one stage is greater than the cross-sectional area of the wire of the gauzes in the next succeeding stage considered in the direction of flow of reactants through the catalyst unit.

4,469,667

PROCESS FOR PRODUCTION OF PITCH-DERIVED CARBON FIBERS

Seiichi Uemura, Tokyo; Shunichi Yamamoto; Takao Hirose, both of Kamakura; Hiroaki Takashima, Kawasaki, and Osamu Kato, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,939

Claims priority, application Japan, Dec. 28, 1981, 56-209649

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.³ D01F 9/12; C10C 3/02

U.S. Cl. 423—447.1 6 Claims

1. A process for the production of carbon fibers comprising melt spinning a pitch to obtain pitch fibers, infusibilizing the thus obtained pitch fibers, carbonizing or further graphitizing the thus infusibilized pitch fibers to obtain high performance carbon fibers, wherein said pitch is a specific pitch which is obtained by heating a starting pitch in an inert gas atmosphere to obtain a liquid pitch, forming the thus obtained liquid pitch to a thin film of not larger than 5 mm in thickness, treating the thus formed thin film at a temperature of 200°–350° C. and a reduced pressure of 0.1–10 mm Hg for 1–30 minutes and then heat treating the thus treated thin film at a temperature of 300°–450° C. under atmospheric pressure for 1–60 minutes, to obtain said specific pitch, wherein said specific pitch has the lowest reflectivity in the range of 8.5–9.3% and the highest reflectivity in the range of 11.8–12.5%, wherein the starting pitch is a pitch obtained by incorporating 100 parts by volume of a heavy fraction oil boiling at substantially 200°–450° C. obtained as a by-product at the time of steam cracking at 700°–1200° C. of petroleum comprising at least one member selected from naphtha, kerosene and light oil to produce olefins including ethylene and propylene, with 10–200 parts by volume of aromatic hydrocarbons of 2–3 rings having their nuclei at least partly hydrogenated to form a mixed oil and then heat treating the thus formed mixed oil at a temperature of 380°–480° C. and a pressure of 2–50 Kg/cm^2.G.

4,469,668

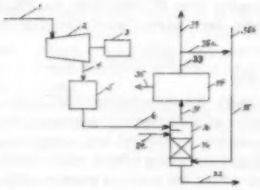
INTEGRATED SYSTEM FOR POLLUTION ABATEMENT AND ENERGY DERIVATION FROM GEOTHERMAL STEAM

Jerome S. Spevack, 160 W. Pinebrook Dr., New Rochelle, N.Y. 10804

Filed Jan. 29, 1982, Ser. No. 343,911

Int. Cl.³ C01B 17/02, 17/16, 31/20

U.S. Cl. 423—573 R 26 Claims



1. A process for reducing emission of sulfur-containing compounds to the environment in connection with the derivation of useful energy from impure steam containing concondensable gases comprising at least hydrogen sulfide, one or more alkaline acting components and one or more other gaseous compounds including at least carbon dioxide, which process comprises:

(a) utlizing said impure steam at relatively high pressure with condensation of at least a portion of said steam to form at relatively low pressure a hydrogen sulfide containing two-phase fluid comprising a liquid-phase of steam condensate with dissolved gases including said alkaline acting components and hydrogen sulfide, and a gaseous-phase of said noncondensable gases with uncondensed water vapor;

(b) treating said liquid-phase by adding thereto an acidic substance which will selectively react or bind at least a portion of the alkaline acting components therein without materially reacting with the hydrogen sulfide and cause said liquid-phase to become depleted in hydrogen sulfide and said gaseous-phase to become augmented in hydrogen sulfide;

(c) separating said gaseous-phase from said treated liquid-phase;

(d) treating said separated gaseous-phase from step (c) and the hydrogen sulfide containing gas from step (g) to remove hydrogen sulfide therefrom and form a vent gas containing carbon dioxide and having a relatively low content of sulfur-containing compounds;

(e) venting a portion of said vent gas to the atmosphere;

(f) passing the other portion of said vent gas in countercurrent contact with said treated liquid-phase for dissolving carbon dioxide therein to selectively react or bind alkaline acting components therein and releasing a further part of said dissolved hydrogen sulfide from the liquid into the vent gas; and

(g) supplying the hydrogen sulfide containing gas from step (f) to provide a part of the gaseous-phase treated in step (d), said gaseous-phase comprising at least 80% of the hydrogen sulfide contain in said impure steam.

4,469,669

PREPARATION OF FERRITES FROM IRON (II) SULFATE

Hartmut Hibst, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 14, 1983, Ser. No. 484,887

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213683

Int. Cl.³ C01G 49/00

U.S. Cl. 423—594 4 Claims

1. A process for the preparation of an M-type ferrite of the formula $AFe_{12}O_{19}$, an Me_2Y-type ferrite of the formula $A_2Me_2Fe_{12}O_{22}$ or a spinel-type ferrite of the formula $MeFe_2O_4$, where A is Ba, Sr, Pb and/or Ca and Me is Zn, Mn, Co, Cu, Fe(II) and/or 1/2(Li(I)+Fe(III)), wherein iron(I) sulfate hydrate is dehydrated under a pressure of less than 0.8 bar at from 50° to 350° C. and then heated in an oxidizing gas stream at from 50° to 600° C., the resulting product is mixed with sodium carbonate and/or potassium carbonate and salts and/or oxides of other A and/or Me cations required in addition to Fe(III) for the particular ferrite composition, the mixture obtained is heated at from 700° to 1,200° C., and the resulting ferrite is then isolated by leaching with water.

4,469,670

PROCESS FOR RECOVERING CESIUM FROM CESIUM ALUM

Peter G. Mein, LaSalle, Ill., assignor to Carus Corporation, LaSalle, Ill.

Filed Jul. 12, 1983, Ser. No. 512,925

Int. Cl.³ C01B 1/02

U.S. Cl. 423—599 13 Claims

1. A process for recovering cesium from cesium alum, $CsAl(SO_4)_2$, comprising:

(a) reacting cesium alum with a water-soluble permanganate in an aqueous reaction medium at a temperature above 35° C., at least 1.5 moles of permanganate ion being present per mole of cesium;

(b) forming solid-phase cesium permanganate ($CsMnO_4$) as said reaction proceeds at a pH at which the aluminum sulfate remains in solution and continuing said reaction until substantially all of the cesium alum present has been converted to $CsMnO_4$, the final pH of said reaction me-

dium being below a pH at which insoluble aluminum hydroxide forms; and

(c) separating the resulting solid-phase $CsMnO_4$ from the residual solution to obtain cesium permanganate of high purity.

4,469,671

CONTRACEPTIVE DEVICE

Ronald E. Zimmerman, Danville; Philip J. Burck, Indianapolis, both of Ind., and Richard L. Dunn, Birmingham, Ala., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 22, 1983, Ser. No. 468,436
Int. Cl.[3] A61K *9/00, 9/24*
U.S. Cl. 424—16 7 Claims

1. A flexible contraceptive device capable of being held retentively in the vagina comprising a bioinsoluble, biocompatible polyurethane core permeated with a cationic salt acrosin inhibitor, said core being coated with a thin polyurethane film, and capable of releasing to the vaginal fluids a contraceptive concentration in excess of 400 mcg./day of said cationic salt acrosin inhibitor for 21 days or longer.

4,469,672

METHOD OF COMBINED PARENTERAL AND ORAL VACCINATION FOR SWINE DYSENTERY

Delbert L. Harris, Rothville, Mo., assignor to Iowa State University Research Foundation, Ames, Iowa

Filed Apr. 7, 1983, Ser. No. 482,796
Int. Cl.[3] A61K *39/02, 9/14, 9/18*
U.S. Cl. 424—23 6 Claims

1. The method of increasing the resistance of swine to dysentery infection in which there is first parenterally administered to the swine an effective sensitizing dose of killed cells of a virulent isolate of *Treponema hyodysenteriae* (*T. hyo.*) and thereafter killed cells of a virulent isolate of *T.hyo.* are orally administered for a period of successive days before the swine contract the infection, wherein the improvement comprises carrying out said oral administration following said sensitizing parenteral administration by:

(a) applying an aqueous suspension of said killed cells of *T. hyo.* to a free-flowing mass of uncoated porous particles of vermiculite so that said suspension is distributed therethrough and adsorbed thereby;

(b) mixing said particles with a dry particulate swine feed material;

(c) feeding the resulting feed containing said *T. hyo.* adsorbed in said vermiculite particles to the swine to be protected against dysentery infection, said swine each receiving on the average at least 1×10^9 of said *T. hyo.* cells per each 24 hour day over a feeding period of at least 4 successive days.

4,469,673

ORAL COMPOSITION

Isao Iioka, Tokyo; Keiiti Yamagishi, Narashino; Hiroshi Sato, Tokyo, and Nobuo Suganuma, Funabashi, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Feb. 5, 1981, Ser. No. 231,847
Claims priority, application Japan, Feb. 6, 1980, 55-13317
Int. Cl.[3] A61K *7/28, 37/48*
U.S. Cl. 424—50 15 Claims

1. An oral composition comprising:

dextranase in an amount of 100 to 100,000 units per gram of the composition; an anionic surfactant in an amount of 0.5 to 7% by weight of the composition; a flavor selected from the group consisting of eugenol, cinnamic aldehyde and mixtures thereof in an amount of 0.001 to 0.5% by weight of the composition; carvone; menthol; and water wherein carvone and l-menthol are present at a weight ratio of 2:8 to 7:3 and the combined amount of carvone and l-menthol is 0.3 to 3% by weight of the composition, whereby dextranase in the presence of water is stabilized.

4,469,674

STABLE ORAL COMPOSITIONS CONTAINING ZINC AND FLUORIDE COMPOUNDS

Nutan B. Shah, New Rochelle, N.Y., and Nicholas F. Schmidt, Brookfield, Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 299,046, Sep. 3, 1981, abandoned. This application May 2, 1983, Ser. No. 490,259
Int. Cl.[3] A61K *7/16, 7/18*
U.S. Cl. 424—52 20 Claims

1. A stable water-containing oral composition substantially free of insoluble fluoride precipitants consisting essentially of an effective mouth odor inhibiting amount of an organic zinc salt selected from the group consisting of zinc salicylate, zinc lactate, zinc gluconate and mixtures thereof and an effective anti-caries amount of a water soluble inorganic ionic fluoride salt, said zinc and said fluoride salts being in simple solution without additional adjuvant to inhibit interaction between zinc ion and fluoride ion in an oral vehicle containing at least sufficient water to solubilize said salts.

4,469,675

PESTICIDAL FORMULATION

Ralston Curtis, and Steven C. Papanu, both of Los Altos, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 325,955, Nov. 30, 1981, Pat. No. 4,372,943, and Ser. No. 228,419, Jan. 26, 1981, abandoned. This application Dec. 2, 1982, Ser. No. 446,130
The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.
Int. Cl.[3] A61K *31/74;* A01N *25/22, 37/34*
U.S. Cl. 424—78 12 Claims

1. A stable pesticidal oil-in-water concentrate consisting essentially of:

(a) 1 to 50% by weight of an active ingredient selected from half resolved fluvalinate, permethrin, cypermethrin, deltamethrin, fenpropathrin and fenvalerate dispersed as particles having an average size less than 1 micron;

(b) 2 to 20% by weight of polyvinyl alcohol having a molecular weight of from 2,000 to 125,000 and having from 11 to 28% of its hydroxy groups present as the acetate ester;

(c) The balance being water; and the emulsion being freeze-thaw stable, 50 degrees centigrade storage stable and water dispersable.

4,469,676

METHOD FOR ELIMINATING WRINKLES OCCURRING IN THE HUMAN SKIN

Michel Hecmati, 10697 Somma Way, Los Angeles, Calif. 90077

Filed Jun. 21, 1983, Ser. No. 506,428
Int. Cl.[3] A61K *35/32*
U.S. Cl. 424—95 8 Claims

1. A method for eliminating wrinkles in the skin of humans which comprises:

injecting, with a syringe, a syringe injectable composition which is substantially non-absorbable by the human body, directly under the area where said wrinkle occurs along substantially its entire length, the amount of said syringe injectable composition injected being substantially sufficient to smooth the skin where the wrinkle exists, said syringe injectable composition consisting essentially of sterile cartilage particles which are substantially non-absorbable by the human body, the size of said sterile, non-absorbable cartilage particles being such that the largest of said particles are smaller than and will flow through the injectable opening of said syringe.

4,469,677

POLYPEPTIDE ACTIVE IMMUNOSUPPRESSANT FRACTION

J. Gabriel Michael, 418 Chisholm Trail, Cincinnati, Ohio 45215, and Amadeo J. Pesce, 5769 Whitechapel, Cincinnati, Ohio 45236

Continuation-in-part of Ser. No. 139,881, Feb. 19, 1980, Pat. No. 4,338,297. This application Jun. 30, 1982, Ser. No. 393,771
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ A61K *39/36, 39/35;* C07G *7/00*
U.S. Cl. 424—91 13 Claims

1. An allergen desensitizing polypeptide fraction derived by proteolytic enzymatic digestion from a specific globular protein allergen causing the allergic reaction to be treated, said allergen being a native pollen or insect venom containing phospholipase A, said fraction consisting essentially of a degraded polypeptide having a molecular weight of less than about 10,000, a nominal molecular radius not greater than about 15 angstroms, an inability to precipitate with specific antibodies, an inability to induce substantial passive cutaneous anaphylaxis reaction in a sensitized mammal, an inability to release histamine from sensitized mast cells or basophils, an inability to induce substantial antibody response, and a capability of inducing antigen-specific suppression.

8. A method of desensitizing a mammal against allergic reaction, which comprises administering to an atopic mammal, prior to or after exposure to an antigen, a dosage of a polypeptide fraction derived by proteolytic enzymatic digestion from a specific globular protein allergen causing said allergic reaction in an amount effective to inhibit significantly immunological reactions without inducing anaphylaxis in said mammal, said allergen being a native pollen or insect venom containing phospholipase A, said fraction consisting essentially of a degraded polypeptide having a molecular weight of less than about 10,000, and a nominal molecular radius not greater than about 15 angstroms.

4,469,678

METHOD OF TREATING BACTERIAL, VIRAL OR PARASITIC DISEASES

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Continuation-in-part of Ser. No. 400,590, Jul. 22, 1982, abandoned, and a continuation-in-part of Ser. No. 400,591, Jul. 22, 1982, abandoned, and a continuation-in-part of Ser. No. 400,592, Jul. 22, 1982, abandoned. This application Jul. 8, 1983, Ser. No. 512,110
Int. Cl.³ A61K *33/04, 31/19, 31/205*
U.S. Cl. 424—164 3 Claims

1. A method for treating a human or animal host infected with bacteria and viruses or infested with parasites which comprise: administering to said host a pharmaceutical composition comprising diaminodipropionic disulfide acid or its disodium salt and disodium thiosulfate in amount effective to give a reducing action in vivo after injection liberating charged hydrogen and charged aminopropionic sulfide radical for neutralizing bacteria and viruses and killing parasites.

2. The method of claim 1, where the pharmaceutical composition comprises 100 to 200 mg of dry diaminodipropionic disulfide acid or its disodium salt and 300 to 800 mg of dry disodium thiosulfate dissolved in 1 to 10 ccm distilled water, which is injected intravenously or intramuscularly in the host in need of such treatment per 24 hour period.

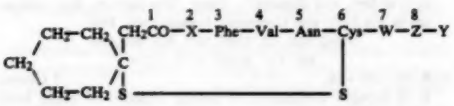
4,469,679

OCTAPEPTIDE VASOPRESSIN ANTAGONISTS

William F. Huffman, Malvern, and Michael L. Moore, Media, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 16, 1983, Ser. No. 467,117
Int. Cl.³ A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 18 Claims

1. A polypeptide having the formula:



in which:

X is D-Phe, D-Val, D-Leu, D-Ile, D-norVal, D-Pba, D-norLeu, D-Cha, D-Abu, D-Met, D-Tyr or D-Tyr(alk);

Y is NH_2, NHalk, NHbzl or OH;

W is Pro or dehydro-Pro; and

Z is D-Arg, L-Arg, D-Lys or L-Lys,

alk being lower alkyl of 1–4 carbons, or a pharmaceutically acceptable salt thereof.

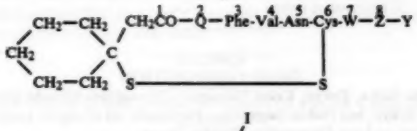
4,469,680

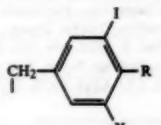
IODINATED VASOPRESSIN ANTAGONISTS

William F. Huffman, Malvern, and Michael L. Moore, Media, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 6, 1983, Ser. No. 511,120
Int. Cl.³ A61K *37/00, 43/00;* G01N *33/00;* C07C *103/52*
U.S. Cl. 424—177 8 Claims

1. A polypeptide of the formula:





in which:

Q is D- or L-NH—CH—;

Y is NH_2, OH, Gly or Gly(NH_2);

W is Pro;

Z is D- or L-Arg;

X is hydrogen or, when R is OH, I; and

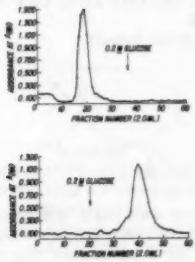
R is —OH or —O-alk of 1–2 carbons; or a pharmaceutically acceptable salt thereof.

4,469,681

METHOD AND SYSTEM FOR THE CONTROLLED RELEASE OF BIOLOGICALLY ACTIVE SUBSTANCES TO A BODY FLUID

Michael Brownlee, Watertown, Mass., and Anthony Cerami, Flanders, N.J., assignors to The Rockefeller University, New York, N.Y.

Division of Ser. No. 62,484, Jul. 31, 1979, Pat. No. 4,348,387.
This application Jun. 29, 1981, Ser. No. 278,358
The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.
Int. Cl.³ A61K *37/26*
U.S. Cl. 424—178 **18 Claims**



1. A process of treating hyperglycemia, which comprises: delivering, from a dialysis tube to a glucose containing human body fluid, a reversible complex of (1) a hypoglycemically active insulin analogue which is a conjugate between a carbohydrate and an insulin and (2) a lectin having affinity for glucose and for the carbohydrate portion of said conjugate (1); thereby causing the glucose present in said fluid to complex to said lectin and to release said conjugate into said fluid.

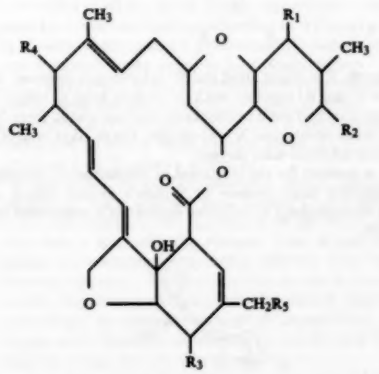
4,469,682

AVERMECTIN AND MILBEMYCIN PHOSPHATE ESTERS, PHARMACEUTICAL COMPOSITIONS, AND METHOD OF USE

Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 28, 1983, Ser. No. 461,843
Int. Cl.³ A61K *31/70*; C07H *17/08*; C07D *493/22*
U.S. Cl. 424—180 **19 Claims**

1. A compound having the formula:

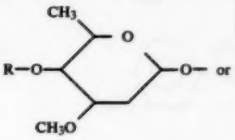


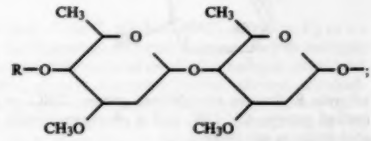
wherein the broken line indicates a single or a double bond; wherein R_1 is H, loweralkanoyloxy, OH, =O or OR provided that R_1 is present only when the broken line indicates a single bond;

R_2 is methyl, ethyl, iso-propyl or sec-butyl;

R_3 is OH, OCH_3, loweralkanoyloxy, or OR;

R_4 is H, OH, OR, loweralkanoyloxy, α-L-oleandrosyloxy, 4'-(α-L-oleandrosyl)α-L-oleandrosyloxy, 4'-loweralkanoyl-αL-oleandrosyloxy, 4''-loweralkanoyl-4'-(α-L-oleandrosyl)-α-L-oleandrosyloxy,





R_5 is H, or OR; and

R is P(O)(OH)(OMe), $P(O)(OMe)_2$, $P(O)(OCH_2CCl_3)_2$, $P(O)(OH)_2$, P(O)(OH)(OM), $P(O)(OM)_2$, P(O)(OH-)—$O^-(H_3N^+$-alk), $P(O)(O^-)_2(H_3N^+alk)_2$,

wherein M is an alkali metal, Me is methyl and alk is a loweralkyl; and physiologically acceptable salts thereof provided at least one of R_1, R_3, R_4 and R_5 contains a phosphate group of the R substituent.

18. A method for the treatment of parasitic infections which comprises administering to an animal infected with parasites an effective amount of a compound of claim **1**.

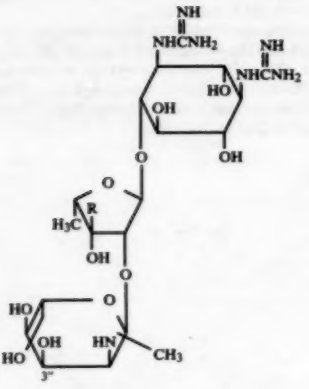
4,469,683

3''-EPISTREPTOMYCIN AND ITS DIHYDRO DERIVATIVE, PHARMACEUTICAL COMPOSITIONS AND PRODUCTION OF THE SAME

Hamao Umezawa; Sumio Umezawa, both of Tokyo; Tsutomu Tsuchiya, Yokohama; Tetsuo Shitara, Tokyo, and Shuichi Sakamoto, Kodaira, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 473,921
Claims priority, application Japan, Mar. 10, 1982, 57-36523
Int. Cl.³ A61K *31/71*; C07H *15/22*
U.S. Cl. 424—180 **10 Claims**

1. 3''-Epistreptomycin or 3''-epidihydrostreptomycin of the general formula



wherein R denotes an aldehyde group—CHO or a hydroxymethyl group—CH_2OH, and a pharmaceutically acceptable acid-addition salt thereof.

7. An antibacterial composition comprising an antibacterially effective amount of 3″-epistreptomycin or 3″-epidihydrostreptomycin as the active ingredient, in combination with a pharmaceutically acceptable carrier for the active ingredient.

4,469,684

STORAGE STABLE TOPICAL PHARMACEUTICAL COMPOSITION CONTAINING ZINC ERYTHROMYCIN AND LOW DIELECTRIC SOLVENTS

James E. Huggins, Madeira; Mary L. Batt, Wyoming, and William J. Kozarek, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 15, 1982, Ser. No. 434,649

Int. Cl.³ A61K *31/71*

U.S. Cl. 424—181 **12 Claims**

1. A stable topical pharmaceutical composition comprising:

(a) a safe and effective amount of zinc erythromycin comprising a mixture of a toxicologically-acceptable zinc salt and an erythromycin compound selected from the group consisting of erythromycin base, salts of erythromycin base with acids, and ester derivatives of erythromycin; and

(b) from about 50% to about 99% of t-butanol.

4,469,685

PROCESS FOR PRODUCING INTERFERON INDUCERS

Yasuhiko Kojima, Yokohama; Seishi Konno; Sadao Tamamura, both of Tokyo, and Takashi Hashimoto, Chofu, all of Japan, assignors to The Kitasato Institute, Tokyo, Japan

Continuation-in-part of Ser. No. 212,066, Dec. 2, 1980,. This application May 5, 1983, Ser. No. 491,844

Claims priority, application Japan, Dec. 3, 1979, 54-156627; Dec. 31, 1979, 54-172643; European Pat. Off., Dec. 2, 1980, 80304338.9

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **15 Claims**

1. A process for producing a water-soluble interferon inducer from a plant tissue, comprising extracting said interferon inducer with water from the tissue of a plant belonging to the group consisting of Atractylodes, Lonicera, Plantago, Lithospermum, Liqusticum, Cnidium, Bupleurum, Notopterygium, Heracleum, Aralia, Panax, Polygala, Sophora, Euchresta, Astragalus, Sinomenium, Stephania, Cocclus, Cimicifuga, Rheum, Gastroida, Asparagus, Pinellia and Evoida containing said interferon inducer at a temperature of from ambient to the boiling point of the extraction mixture for a period of up to 5 days sufficient to extract the major portion of said interferon inducer present in said tissue, forming a supernatant from the extracted solution, fractionating the supernatant to yield fractions containing the major portion of said interferon inducer present in the supernatant, and recovering said interferon inducer therefrom.

4,469,686

SUBSTITUTED PHOSPHINIC ACIDS

Kenneth J. M. Andrews, Harpenden, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

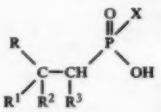
Filed Jan. 30, 1981, Ser. No. 229,912

Claims priority, application United Kingdom, Feb. 1, 1980, 8003420; Dec. 3, 1980, 8038795

Int. Cl.³ A61K *33/42*; C07F *9/65*

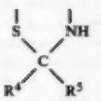
U.S. Cl. 424—200 **10 Claims**

1. Compounds of the formula



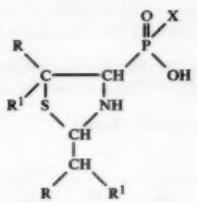
I

wherein R is lower alkyl and R^1 is hydrogen or lower alkyl; or R and R^1 together with the carbon atom to which they are attached are a cycloalkane ring containing 3 to 6 carbon atoms; R^2 and R^3 together are a grouping of the formula



in which R^4 and R^5 each is lower alkyl; and X is hydrogen, lower alkyl or aryl, and salts thereof.

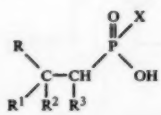
7. Compounds of the formula



IV

wherein R is lower alkyl and R^1 is hydrogen or lower alkyl; or R and R^1 together with the carbon atom to which they are attached are a cycloalkane ring containing from 3 to 6 carbon atoms; and X is hydrogen, lower alkyl or aryl, and acid addition salts thereof.

10. A method for the treatment of inflammatory conditions, degenerative joint diseases or Wilson's disease which comprises administering an effective amount of a compound of the formula



I

wherein R is lower alkyl and R^1 hydrogen or lower alkyl; or R and R^1 together with the carbon atom to which they are

attached are a cycloalkane ring containing from 3 to 6 carbon atoms; R^2 and R^3 together are a grouping of the formula

in which R^4 and R^5 each is lower alkyl; and X is hydrogen, lower alkyl or aryl or a pharmaceutically-acceptable salt thereof.

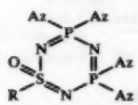
4,469,687

INORGANOCYCLIC COMPOUNDS USABLE AS MEDICAMENTS AND A PROCESS FOR THEIR PREPARATION

Jean-Francois Labarre; Francois Sournies, both of Toulouse, France; Johan C. van de Grampel, Paterswolde, and Adriaan A. Van Der Huizen, Groningen, both of Netherlands, assignors to Agence Nationale de Valorisation de la Recherche, France

Continuation of Ser. No. 162,759, Jun. 25, 1980, Pat. No. 4,317,773. This application Sep. 9, 1981, Ser. No. 300,561
Claims priority, application France, Jul. 4, 1979, 79 17336
The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.
Int. Cl.³ C07F 9/56, 9/58, 9/65; A01K 31/675
U.S. Cl. 424—200 **10 Claims**

1. A compound corresponding to the formula:



(I)

wherein R is selected from among:

a halogen atom,

a hydroxy group,

an amino group,

a C_1–C_7 alkyl or alkoxy group that is unsubstituted or substituted by one or more halogen atoms or by a phenyl group,

a C_2–C_7 alkenyl group that is unsubstituted or substituted by one or more halogen atoms or by a phenyl group,

a C_2–C_7 alkynyl group that is unsubstituted or substituted by one or more halogen atoms or by a phenyl group.

a monocyclic aryl or aryloxy group that is unsubstituted or substituted by one or more halogen atoms, a C_1–C_7 alkyl group or a C_1–C_7 alkoxy group, or

an N-substituted or N,N-disubstituted amino group, the substituent being selected from among C_1–C_7 alkyl or C_3–C_6 cycloalkyl; or the substituent of the amino group may form a ring with the nitrogen atom of said amino group, the resulting group being selected from among aziridinyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyrimidinyl, pyrazinyl, pyrrolidinyl, imidazolidinyl, piperidyl, piperazinyl, isoxazolyl, furazanyl or morpholinyl, such ring is unsubstituted or substituted by one or more C_1–C_7 alkyl or alkoxy groups; and wherein

Az is an unsubstituted 1-aziridinyl group or a 1-aziridinyl group which is substituted by a C_1–C_7 alkyl or alkoxy group.

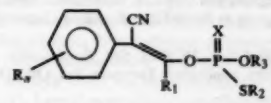
4,469,688

PESTICIDAL CYANO ENOL PHOSPHATES

Themistocles D. J. D'Silva, Chapel Hill, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1982, Ser. No. 393,552
Int. Cl.³ A01N 57/14; C07F 9/165
U.S. Cl. 424—210 **21 Claims**

1. A method of controlling insects and mites which comprises subjecting them to an insecticidally or miticidally effective amount of a compound of the formula:



wherein:

R is hydrogen, C_1 to C_4 alkyl, C_1 to C_4 alkylthio, C_1 to C_4 alkoxy, trihalomethyl, di- or trifluoromethoxy or halogen,

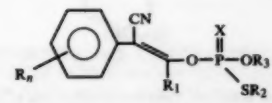
R_1 is hydrogen, unsubstituted or alkyl or halogen substituted cycloalkyl, alkenyl, alkenylcycloalkyl, alkynyl, trihaloalkyl, alkoxycarbonyl, benzyl, C_1 to C_{10} alkyl, alkoxy C_1 to C_{10} alkyl, haloalkoxy C_1 to C_{10} alkyl, alkoxycarbonyl C_1 to C_{10} alkyl, alkoxyphenyl, haloalkoxyphenyl, or alkoxycarbonylphenyl;

X is oxygen or;

n is 0 to 5; and

R_2 is n-propyl and R_3 is ethyl.

8. Compounds of the formula:



wherein:

R is hydrogen, C_1 to C_4 alkyl, C_1 to C_4 alkylthio, C_1 to C_4 alkoxy, trihalomethyl, di- or trifluoromethoxy or halogen,

R_1 is hydrogen, unsubstituted or alkyl or halogen substituted cycloalkyl, alkenyl, alkenylcycloalkyl, alkynyl, trihaloalkyl, alkoxycarbonyl, benzyl, C_1 to C_{10} alkyl, alkoxy C_1 to C_{10} alkyl, haloalkoxy C_1 to C_{10} alkyl, alkoxycarbonyl C_1 to C_{10} alkyl, alkoxyphenyl, haloalkoxyphenyl, or alkoxycarbonylphenyl;

X is oxygen;

n is 0 to 5; and

R_2 is n-propyl and R_3 is ethyl.

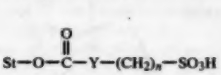
4,469,689

SULFONATE CONTAINING ESTER PRODRUGS OF CORTICOSTEROIDS

Bradley D. Anderson, Kalamazoo, and Robert A. Conradi, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 30, 1983, Ser. No. 480,603
Int. Cl.³ A61K 31/56
U.S. Cl. 424—243 **9 Claims**

1. A compound of the formula



wherein St is corticosteroid absent the C-21 hydroxyl of said corticosteroid; Y is a bond or oxo; and n is an integer of from 5 to 10.

7. A pharmaceutical composition comprising an effective quantity of a compound of claim 1 as a sterile aqueous solution.

8. A composition of claim 7 which is in unit dosage form.

9. A composition of claim 8 wherein the compound is:
21-(6-sulfohexanoate)-6α-methylprednisolone sodium salt,
21-(11-sulfohendecanoate)-6α-methylprednisolone sodium salt, or
21-[(6-sulfohexyl)carbonate]dexamethasone sodium salt.

4,469,690

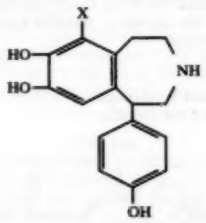
SYNERGISTIC COMPOSITIONS OF RENAL DOPAMINERGIC AGENT AND β-BLOCKER

Dennis M. Ackerman, Cherry Hill, N.J.; Barry A. Berkowitz, Fort Washington, and Virgil D. Wiebelhaus, Springfield, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Nov. 16, 1982, Ser. No. 442,051
Claims priority, application European Pat. Off., Dec. 8, 1981, 81110252.4
Int. Cl.³ A61K 31/33
U.S. Cl. 424—244 8 Claims

1. A composition, in dosage unit form, having activity for improving kidney function comprising:

(A) a nontoxic, renal dopaminergic quantity of a compound of the formula:



in which X is chloro, fluoro or methyl; one of its pharmaceutically acceptable, acid addition salts, one of its stereoisomers or one of its tri-O-lower alkanoyl esters, each lower alkanoyl group having 2–8 carbon atoms; and

(B) a nontoxic, clinically effective quantity of propranolol.

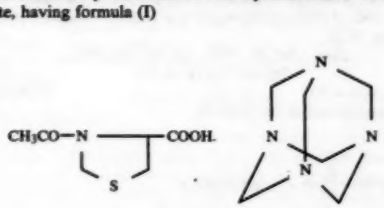
4,469,691

HEXAMETHYLENETETRAMINE-N-ACETYL-THIAZOLIDINE-4-CARBOXYLATE, A PROCESS FOR ITS PREPARATION AND A PHARMACEUTICAL COMPOSITION CONTAINING IT

Leonardo De Vincentiis, Rome, Italy, assignor to Ausonia Farmaceutici s.r.l., Rome, Italy

Filed Nov. 12, 1982, Ser. No. 441,161
Claims priority, application Italy, Mar. 1, 1982, 19900 A/82
Int. Cl.³ C07D 487/18; A61K 31/425
U.S. Cl. 424—249 3 Claims

1. Hexamethylenetetramine-N-acetylthiazolidine-4-carboxylate, having formula (I)



(I)

3. A pharmaceutical composition for the chemotherapeutical treatment of affections of the urinary and intestinal tracts and for the treatment of bladder and intestinal catarrhs, comprising as the active agent an effective amount of hexamethylenetetramine-N-acetyl-thiazolidine-4-carboxylate of formula I in admixture with a pharmaceutically acceptable carrier.

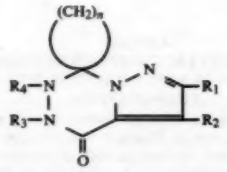
4,469,692

SPIRO DERIVATIVES OF THE PYRAZOLO [1,5-d] [1,2,4] TRIAZINE RING SYSTEM AND A PROCESS FOR THE PREPARATION THEREOF

Endre Tihanyi; Ferenc Andrasi; Melinda Gál, and Eleonóra Sineger, all of Budapest, Hungary, assignors to Alkaloida Vegyészeti Gyár, Budapest, Hungary

Filed Nov. 17, 1982, Ser. No. 442,451
Claims priority, application Hungary, Nov. 18, 1981, 3445/81
Int. Cl.³ C07D 487/04; A61K 31/53, 31/415
U.S. Cl. 424—249 7 Claims

1. A spiro derivative of the pyrazolo[1,5-d][1,2,4]triazine ring system of the formula I



I

wherein

R_1 and R_2 represent, independently from each other, a hydrogen atom or a C_{1-4} alkyl group,

R_3 stands for a hydrogen atom, an unbranched or branched C_{1-4} alkyl, C_{2-5} alkenyl or benzyl group,

R_4 represents a hydrogen atom, an unbranched or branched C_{1-4} alkyl, C_{4-6} cycloalkyl, benzyl or a benzyl group substituted by one or more halogen atom, and

n means 4 to 8.

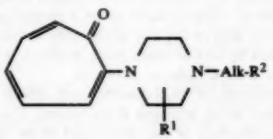
4,469,693

2-(4-SUBSTITUTED ALKYL-1-PIPERAZINYL)-2,4,6-CYCLOHEPTATRIEN-1-ONE DERIVATIVES

Jehan F. Bagli, Kirkland; Tibor Bögri, Montreal, and Katherine Voith, Dorval, all of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Feb. 25, 1980, Ser. No. 124,163
Int. Cl.³ A61K 31/495; C07D 241/04
U.S. Cl. 424—250 29 Claims

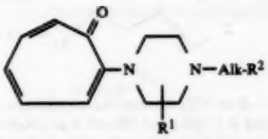
1. A compound of the formula



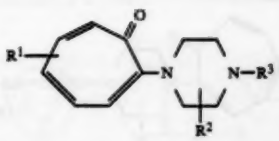
in which Alk is a divalent alkyl having one to six carbon atoms; R^1 is hydrogen or lower alkyl having one to three carbon atoms; and R^2 is lower alkoxy, cyano, aminocarbonyl, lower alkoxycarbonyl, cyclo(lower)alkyl, phenyl, phenoxy, hydroxy(lower)alkoxy, 3-indolyl, 1-oxo-2,4,6-cycloheptatrien-2-yl-amino, 1-imidazol-4-yl, 1-oxo(lower)alkoxy, acetylthio, phenyl mono-, di or trisubstituted with lower alkyl, halo, lower alkoxy, hydroxy or trifluoromethyl, or phenoxy mono-, di- or trisubstituted with lower alkyl, halo, lower alkoxy,

acetylamino, hydroxy or trifluoromethyl; or a therapeutically acceptable acid addition salt thereof.

28. A pharmaceutical composition, for stimulating dopamine receptors in a mammal in need thereof, which comprises an effective dopamine receptor stimulating amount of a compound of the formula



in which Alk is a divalent alkyl having one to six carbon atoms; R^1 is hydrogen or lower alkyl having one to three carbon atoms; and R^2 is lower alkoxy, cyano, aminocarbonyl, lower alkoxycarbonyl, cyclo(lower)alkyl, phenyl, phenoxy, hydroxy(lower)alkoxy, 3-indolyl, 1-oxo-2,4,6-cycloheptatrien-2-yl-amino, 1H-imidazol-4-yl, 1-oxo(lower)alkoxy, acetylthio, phenyl mono-, di- or trisubstituted with lower alkyl, halo, lower alkoxy, hydroxy or trifluoromethyl, or phenyl mono-, di- or trisubstituted with lower alkyl, halo, lower alkoxy, acetylamino, hydroxy or trifluoromethyl; or a therapeutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.



in which R^1 represents a substituent at positions 3, 4, 5, 6 or 7 of the 2,4,6-cycloheptatrien-1-one ring and is selected from hydrogen, halo, lower alkyl, lower alkoxy, trifluoromethyl, or 1-oxo(lower)alkylamino; R^2 is hydrogen or lower alkyl having one to three carbon atoms; and R^3 is hydrogen, phenyl, lower alkyl, lower alkenyl, lower alkynyl, cyclo(lower)alkyl, lower alkoxycarbonyl, 1-oxo(lower)-alkyl, cyclo(lower)alkyl substituted with a lower alkyl; lower alkenyl substituted with phenyl; phenyl mono-, di- or trisubstituted with lower alkyl, halo, lower alkoxy, hydroxy or trifluoromethyl; 2-(4,5-dihydro-2-oxazolyl)benzoyl, 2,3-dihydro-8-oxo-cyclohepta[b]furan-2-ylmethyl, oxo-2,4,6-cycloheptatrien-2-yl, 2-(acetylamino)ethyl, 2,3-diacetyloxypropyl, 2-(1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)ethyl or 5-methyl-2,4-imidazolidinedione-5-ylmethyl; or a therapeutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

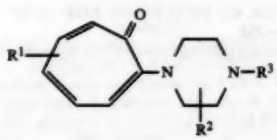
4,469,694

2-(1-PIPERAZINYL)-2,4,6-CYCLOHEPTATRIEN-1-ONE DERIVATIVES

Jehan F. Bagli, Kirkland; Tibor Bögri, Montreal, and Katherine Voith, Dorval, all of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Feb. 25, 1980, Ser. No. 124,164
Int. Cl.³ A61K *31/495*; C07D *241/04*
U.S. Cl. 424—250 35 Claims

1. A compound of the formula



in which R^1 represents a substituent at positions 3, 4, 5, 6 or 7 of the 2,4,6-cycloheptatrien-1-one ring and is selected from hydrogen, halo, lower alkyl, lower alkoxy, trifluoromethyl, or 1-oxo(lower)alkylamino; R^2 is hydrogen or lower alkyl having one to three carbon atoms; and R^3 is hydrogen, phenyl, lower alkyl, lower alkenyl, lower alkynyl, cyclo(lower)alkyl, lower alkoxycarbonyl, 1-oxo(lower)alkyl, cyclo(lower)alkyl substituted with a lower alkyl; lower alkenyl substituted with phenyl; phenyl mono-, di or trisubstituted with lower alkyl, halo, lower alkoxy, hydroxy or trifluoromethyl; 2-(4,5-dihydro-2oxazolyl)benzoyl, 2,3-dihydro-8-oxo-cyclohepta[b] furan-2-ylmethyl, 1-oxo-2,4,6-cycloheptatrien-2-yl, 2-(acetylamino)ethyl, 2,3-diacetyloxypropyl, 2-(1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl)ethyl or 5-methyl-2,4-imidazolidinedione-5-ylmethyl; or a therapeutically acceptable acid solution salt thereof.

31. A pharmaceutical composition, for stimulating dopamine receptors in a mammal in need thereof, which comprises an effective dopamine receptor stimulating amount of a compound of the formula

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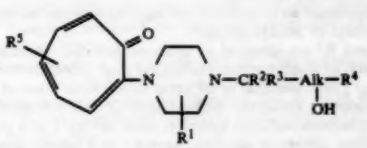
4,469,695

2-(4-HYDROXYALKYL-1-PIPERAZINYL)-2,4,6-CYCLOHEPTATRIEN-1-ONE DERIVATIVES

Jehan F. Bagli, Kirkland; Tibor Bögri, Montreal, and Katherine Voith, Dorval, all of Canada, assignors to Ayerst, McKenna & Harrison, Inc., Montreal, Canada

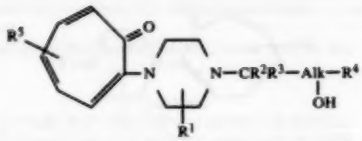
Filed Feb. 25, 1980, Ser. No. 124,165
Int. Cl.³ A61K *31/495*; C07D *241/04*
U.S. Cl. 424—250 37 Claims

1. A compound of the formula



in which Alk is a trivalent alkylene having one to six carbon atoms; R^1 is hydrogen or lower alkyl having one to three carbon atoms; R^2 and R^3 each is hydrogen or lower alkyl having one to three carbon atoms; R^4 is hydrogen, phenyl, hydroxy, phenoxy, phenyl mono-, di- or trisubstituted with methylsulfonylamino, lower alkyl, halo, lower alkoxy, hydroxy or trifluoromethyl, or phenoxy mono-, di- or trisubstituted with lower alkyl, halo, lower alkoxy, hydroxy or trifluoromethyl; and R^5 represents a substituent at positions 3,4,5,6 or 7 of the 2,4,6-cycloheptatrien-1-one ring and is selected from hydrogen, halo, lower alkyl, lower alkoxy, trifluoromethyl, or 1-oxo(lower)alkylamino; with the proviso that when R^4 is hydroxy, the hydroxy groups are joined to different carbon atoms; or a therapeutically acceptable acid addition salt thereof.

30. A pharmaceutical composition, for stimulating dopamine receptors in a mammal in need thereof, which comprises an effective dopamine receptor stimulating amount of a compound of the formula



in which Alk is a trivalent alkylene having one to three carbon atoms; R^1 is hydrogen; R^2 and R^3 each is hydogen or lower alkyl having one to three carbon atoms; R^4 is hydrogen, phenyl, hydroxy, phenoxy, phenyl mono-, di- or trisubstituted with lower alkoxy or hydroxy, or phenoxy monosubstituted with lower alkyl or halo; R^5 represents a substituent at position 7 of the 2,4,6-cycloheptatrien-1-one ring and is selected from hydrogen or bromo; or a therapeutically acceptable acid addition salt thereof, and a pharmaceutically acceptable carrier therefor.

4,469,696

SUBSTITUTED 2-AMINO-PYRIDINE DERIVATIVE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICINAL USE

Ulrich Rosentreter; Walter Puls, and Hilmar Bischoff, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

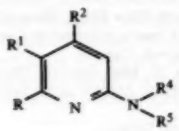
Filed Jun. 3, 1982, Ser. No. 384,469

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1981, 3124673

Int. Cl.³ C07D *401/00;* A61K *31/495*

U.S. Cl. 424—250 **12 Claims**

1. A compound of the formula I



(I)

or a salt thereof in which

R represents an alkyl group having 1 to 4 carbon atoms or a benzyl or phenyl group,

R^1 and R^2 are identical or different and each represents a furyl or phenyl group, the phenyl ring optionally containing 1 or 2 identical or different substituents selected from fluorine, chlorine, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, hydroxy, alkyl having 1 to 4 carbon atoms, alkoxy or alkylthio having 1 to 4 carbon atoms an alkylamino having 1 or 2 carbon atoms per alkyl radical and

R^4 and R^5 together with a nitrogen atom, form a piperazine ring which is optionally substituted in the 4-position by the substituents defined above for R_2.

4,469,697

PENTACYCLIC COMPOUNDS, THEIR PHARMACEUTICAL COMPOSITIONS, AND METHODS OF USE

Derek V. Gardner, Bishops Stortford, and Trevor J. White, Buntingford, both of England, assignors to Beecham Group p.l.c., Brentford, England

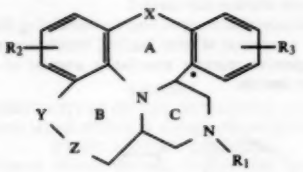
Filed Mar. 25, 1983, Ser. No. 479,016

Claims priority, application United Kingdom, Mar. 27, 1982, 8209087; Mar. 30, 1982, 8209298; Apr. 27, 1982, 8212154

Int. Cl.³ A61K *31/55;* C07D *487/14*

U.S. Cl. 424—250 **14 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt thereof:



(I)

wherein:

X is CH_2, O, S or NR_4 wherein R_4 is hydrogen or C_{1-4} alkyl;

One of Y and Z is NR_5 and the other is CR_6R_7 wherein R_5 is hydrogen, C_{1-4} alkyl or carboxylic C_{1-4} acyl and R_6 and R_7 are either both hydrogen or together form an oxo group;

R_1 is hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{4-7} cycloalkenyl or C_{1-4} alkyl substituted by C_{2-7} alkenyl, C_{2-7} alkynyl, C_{3-7} cycloalkyl, amino optionally substituted by one or two C_{1-4} alkyl groups, disubstituted by C_{4-6} polymethylene optionally interrupted in the methylene chain by an oxygen atom, or substituted by phenyl C_{1-4} alkyl optionally substituted in the phenyl ring by C_{1-4} alkyl, C_{1-4} alkoxy, halogen or trifluoromethyl;

R_2 and R_3 are the same or different and are hydrogen, halogen, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy or trifluoromethyl.

14. A method of treatment of CNS disorder in mammals including humans comprising the administration of a pharmaceutically effective amount of a compound according to any one of the claims 1 to 10 or a pharmaceutically acceptable salt thereof to the sufferer.

4,469,698

DI- OR TRISUBSTITUTED XANTHINES WITH NEUROLEPTIC PROPERTIES AND COMPOSITION

Georges Philippossian, Lausanne, and Marc Enslen, Yverdon, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

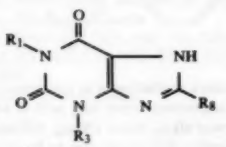
Continuation of Ser. No. 255,212, Apr. 17, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,301

Claims priority, application Switzerland, May 2, 1980, 3431/80

Int. Cl.³ C07D *473/04;* A61K *31/52*

U.S. Cl. 424—253 **27 Claims**

1. A compound corresponding to the formula



(I)

and physiologically acceptable salts thereof wherein:

R_1 is selected from the group consisting of C_2–C_4-alkyl, C_3–C_4-isoalkyl, CH_2-(C_2–C_3-alkenyl), and CH_2-(C_3-isoalkenyl);

R_3 is selected from the group consisting of C_3–C_5-alkyl, C_3–C_5-isoalkyl, CH_2-(C_2–C_4-alkenyl), and CH_2-(C_3–C_4-isoalkenyl); and

R_8 is selected from the group consisting of H, methyl and ethyl;

with the provisos that:

(1) when R_8 is H, R_1 is allyl;

(2) R_1 and R_3 cannot both represent butyl, isobutyl or allyl at the same time; and

(3) when R_1 is ethyl, R_3 is other than 2-methylbutyl;

wherein the compound and its physiologically acceptable salts have neuroleptic activity.

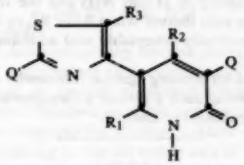
4,469,699

5-(4-THIAZOLYL)-6-ALKYL-2(1H)-PYRIDINONES AND THEIR CARDIOTONIC USE

George Y. Lesher, Schodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 25, 1982, Ser. No. 411,558
Int. Cl.[3] C07D *417/04;* A61K *31/44*
U.S. Cl. 424—263 9 Claims

1. 3-Q-4-R_2-5-(2-Q'-5-R_3-4-thiazolyl)-6-R_1-2(1H)-pyridinone having the formula



where R_1 is alkyl having one to four carbon atoms, R_2 is hydrogen or methyl, R_3 is hydrogen or alkyl having from one to three carbon atoms, Q is cyano and Q' is alkyl having from one to four carbon atoms, amino or R_4NH where R_4 is alkyl having one to four carbon atoms; or an acid-addition salt thereof where Q' is amino or R_4NH.

4,469,700

BENZOYLECGONINE OR BENZOYLNORECGONINE AS ACTIVE AGENTS FOR THE TREATMENT OF RHEUMATOID ARTHRITIS

Lowell M. Somers, Desert Hot Spring, Calif., assignor to Lowell M. Somers, Indio, Calif.

Continuation of Ser. No. 275,307, Jun. 19, 1981, abandoned. This application Dec. 13, 1982, Ser. No. 448,928
Int. Cl.[3] A61K *31/46*
U.S. Cl. 424—265 3 Claims

1. A method of treating rheumatoid arthritis which comprises the administration to a human or other warm-blooded animal in need of such treatment an effective rheumatoid arthritis-treating amount of an active agent selected from benzoylecgonine and benzoylnorecgonine.

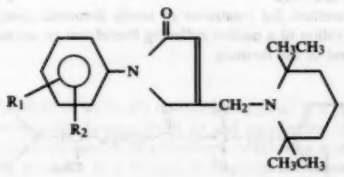
4,469,701

PYRROLID-3-EN-2-ONES AND PHARMACEUTICAL METHODS OF USE THEREOF

Jack R. DeBaun, Sunnyvale; Ferenc M. Pallos, Walnut Creek; Kent E. Matsumoto, Kensington, and John H. Ross, San Jose, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

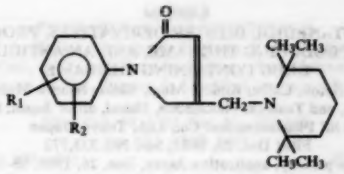
Filed Jun. 23, 1983, Ser. No. 507,246
Int. Cl.[3] A61K *31/445;* C07D *401/06*
U.S. Cl. 424—267 44 Claims

1. A compound of the formula



wherein R_1 and R_2 may be selected from the group consisting of hydrogen, halo, lower alkyl, halo lower alkyl, thiohalo-lower alkyl, thio-lower alkyl, lower alkoxy, cyano and nitro.

36. A method of obtaining hypotensive, bradycardiac, antiarrythmic, anti-ulcerative, pupil-dilating, serum cholesterol reducing, serum glucose reducing or antiedema effects in a mammal comprising internally administering to said mammal an effective amount of a compound of the formula



wherein R_1 and R_2 may be independently selected from the group consisting of hydrogen, halo, lower alkyl, halo lower alkyl, thiohalo-lower alkyl, thio-lower alkyl, lower alkoxy, cyano and nitro.

4,469,702

ANALGESIC COMPOSITION AND USE THEREOF TO AMELIORATE DEEP AND INTRACTABLE PAIN

Thomas L. Schulte, 218 Family Farm Dr., Woodside, Calif. 94062

Continuation-in-part of Ser. No. 276,566, Jun. 23, 1981, Pat. No. 4,369,190. This application Jan. 10, 1983, Ser. No. 456,896
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.
Int. Cl.[3] A61Y *31/10, 31/235*
U.S. Cl. 424—308 14 Claims

11. An analgesic composition adapted for topical administration and comprising an aqueous mixture of biphenamine, at a concentration of up to 1%, and propylene glycol, the concentrations of propylene glycol and biphenamine in the composition being collectively effective to render the composition capable of ameliorating deep or intractable pain when the composition is applied topically proximate the situs of the pain but ineffective for either component of the composition to do so in the absence of the other.

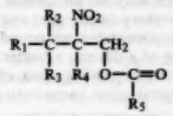
4,469,703

NITROALKANOL DERIVATIVES AND PLANT PROTECTING AGENTS CONTAINING THE SAME

Attila Kis-Tamás; Gyula Mikite, both of Budapest; Erzsébet Csuták née Jakucs, Budaörs, and László Kocsis, Budapest, all of Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Continuation of Ser. No. 174,262, Jul. 31, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,570
Claims priority, application Hungary, Jul. 26, 1979, EE 2684
Int. Cl.[3] A01N *37/02, 43/16, 37/06;* C07C *67/02*
U.S. Cl. 424—311 5 Claims

1. A compound of the formula



wherein

R_1 is cyclohexyl or a phenyl group having optionally a methylenedioxy substituent, a nitro substituent or a halogen substituent,

R_2 and R_4 each represent hydrogen or they form together a valence bond,

R_3 is hydrogen or acetoxy, and

R_5 is methyl or ethyl,

with the proviso that if R_2 and R_4 each stand for hydrogen, R_1 is other than unsubstituted phenyl and R_3 may represent only acetoxy, and with the further proviso that if R_2 and R_4 form

together a valence bond, and R_5 is methyl, R_1 is other than unsubstituted phenyl.

4,469,704

2,3-BUTANEDIOL DIESTER DERIVATIVES, PROCESS FOR PRODUCING THE SAME, AND AN ANTIULCER DRUG CONTAINING THE SAME

Susumu Satoh, Chiba; Kinichi Mogi, Abiko; Saburo Murakami, Chiba, and Toshiaki Nakashima, Shisui, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

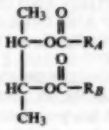
Filed Dec. 23, 1981, Ser. No. 333,772

Claims priority, application Japan, Dec. 26, 1980, 55-186144; Jun. 4, 1981, 56-86034; Jul. 14, 1981, 56-109778; Oct. 2, 1981, 56-157110

Int. Cl.³ A01N *37/02, 37/06;* A01K *31/23*

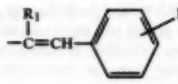
U.S. Cl. 424—312 **8 Claims**

1. An antiulcer composition comprising, as an active ingredient, an antiulcer effective amount of a 2,3-butanediol diester represented by the formula (I):



(I)

where R_A is a saturated alkyl group which may have a branched chain, or a group represented by the formula



where

R_1 is hydrogen, cyano or lower alkyl, and

R_2 is hydrogen, halogen, lower alkyl, lower alkyloxy or lower acyloxy;

R_B is a saturated alkyl group which may have a branched chain, phenyl group which may be substituted with lower alkyl, lower alkoxy or halogen, phenyl alkyl, phenyl propenyl, phenyloxy alkyl or a group represented by the formula

where

R_3 is hydrogen, halogen, cyano, lower alkyl or phenyl,

R_4 is hydrogen, lower alkyl or phenyl, and

R_5 is phenyl which may be substituted with lower alkyl, lower alkoxy, acyloxy or halogen; and

a pharmaceutically acceptable compound selected from the group consisting of a diluent, a binder, a disintegrator, a lubricant, a fluidity improving agent, olive oil, peanut oil, water, physiological saline, cacao butter and synthetic fat.

4,469,705

SATURATED LEUKOTRIENE DERIVATIVES AS ANTIALLERGENS

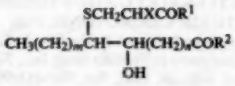
Kerry G. Stanley, Lansdale, and Winston Ho, Hatfield, both of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed Aug. 2, 1982, Ser. No. 404,076

Int. Cl.³ A01N *37/02;* C08H *3/00*

U.S. Cl. 424—312 **21 Claims**

1. A hydroxythioether fatty acid derivative represented by the following formula, and which may be of either threo or erythro configuration:



wherein n is an integer from 2 to 5; m is an integer from 8–12; R^1 is a member selected from the group consisting of OH, O-loweralkyl, NH_2, NH-loweralkyl and NH-carboxyalkyl; and R^2 is OH, or O-loweralkyl; X is a member selected from the group consisting of H and NH_2 and the therapeutically acceptable basic salts thereof when R^1 or R^2, or both, are OH; and the therapeutically acceptable acid addition salts thereof when X is NH_2.

15. A method for treating allergic diseases by administering to an animal having such a disease a therapeutically effective amount of a compound of claim 1.

4,469,706

SELECTIVE BETA-2 ADRENERGIC ANTAGONISTS FOR THE TREATMENT OF GLAUCOMA

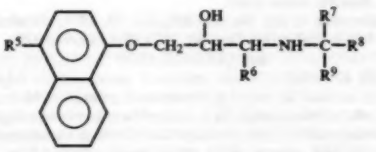
James A. Nathanson, Boston, Mass., assignor to Massachusetts General Hospital, Boston, Mass.

Continuation-in-part of Ser. No. 204,819, Nov. 7, 1980,. This application Apr. 14, 1982, Ser. No. 368,112

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **4 Claims**

1. A method of decreasing the intraocular pressure in the eye of an animal which comprises administering to said animal an intraocular pressure decreasing amount of a compound of the formula:



wherein R^5, R^7, R^8 and R^9 are the same or different, and selected from the group consisting of hydrogen and lower alkyl radicals; and

R^6 is a lower alkyl of C_1 to C_4.

4,469,707

METHOD FOR TREATMENT OF SENILE DEMENTIA

Ulf H. A. Lindberg, Södertälje, and Sven-Ove Ögren, Nykvarn, both of Sweden, assignors to Astra Läkemedel Aktiebolag, Södertälje, Sweden

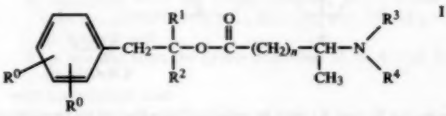
Filed Jun. 2, 1983, Ser. No. 500,337

Claims priority, application Sweden, Apr. 29, 1983, 8302452

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **2 Claims**

1. A method for treatment of senile dementia comprising administration to a patient suffering therefrom an amount of a compound of the formula



I

and pharmaceutically acceptable salts thereof, in which formula the groups R^0 are the same or different and are selected from the group consisting of hydrogen, halogen, alkyl having 1, 2 or 3 carbon atoms, and alkoxy having 1, 2 or 3 carbon

atoms; R^1 is hydrogen, methyl or ethyl; R^2 is methyl or ethyl; R^3 and R^4 are the same or different and are hydrogen or an alkyl group having 1, 2 or 3 carbon atoms; and n is 0, 1 or 2, effective to mitigate the symptoms of senile dementia.

4,469,708

EGG PRODUCT AND PROCESS

Harold Rapp, Fairfield, and William G. Dockendorf, Stamford, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Aug. 24, 1982, Ser. No. 411,073
Int. Cl.³ A23L *1/32*
U.S. Cl. 426—103 31 Claims

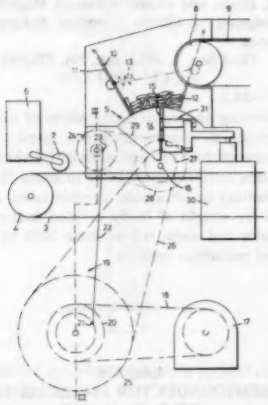
1. An egg product comprising: discrete pieces of freeze-thaw stable cooked egg obtained by cooking an egg mixture, comprising egg and an amount of water-binding carbohydrate effective to impart freeze-thaw stability to the cooked mixture, sufficiently to coagulate the albumen content of the egg and produce a cooked egg giving the appearance of, and producing an organoleptic response similar to, scrambled eggs, and then subdividing said cooked egg; a binder, comprising cold-water soluble gelatin, in an amount effective to hold the discrete pieces of cooked egg together; and a batter coating surrounding said bound discrete pieces, whereby said egg product when cooked provides a product having a crisp batter coating and an interior giving the appearance of, and producing an organoleptic response similar to, scrambled eggs.

4,469,709

METHOD FOR AUTOMATICALLY FEEDING FIRST PRODUCTS ONTO SECOND PRODUCTS

Karl Schrauf, Vorarlberg, Austria, assignor to Seewer AG, Maschinenfabrik, Bern, Switzerland

Filed Mar. 4, 1982, Ser. No. 354,593
Claims priority, application European Pat. Off., Mar. 12, 1981, 81810091.9
Int. Cl.³ B23Q *7/12*; B65H *9/00*
U.S. Cl. 426—231 7 Claims



1. A method of vertically orienting elongated first products for automatically feeding them to and positioning them on second products carried on a conveyor comprising positioning said first products in a receptacle disposed above said conveyor, said receptacle having a pair of spaced walls, the bottom of said receptacle being defined by a feeder part having a downwardly extending feeder opening therein, and moving said feeder part with perturbed sinusoidal motion so that said feeder opening travels back and forth substantially between said walls in perturbed sinusoidal motion to cause said first products to pass through said feeder opening and onto said second products.

4,469,710

POURABLE SOLID SHORTENING

Ronald A. Rielley, Gateshead, England; Kenneth W. Krause, Fairfield, Ohio, and Steve G. Fishter, West Harrison, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 14, 1982, Ser. No. 434,440
Int. Cl.³ A23D *5/00*
U.S. Cl. 426—541 17 Claims

1. A shortening composition suitable for cooking and frying comprising a plurality of discrete pieces of pourable solid fats with solids content indices within area CGH of FIG. 1 which resist agglomeration up to 110° F. and resist development of a waxy taste in foods cooked therein, said solid fats comprising triglycerides of saturated or unsaturated monocarboxylic acids having from 10 to 28 carbon atoms.

4,469,711

PROCESS FOR MAKING QUICK-COOKING PASTA

Edward Seltzer, Teaneck, N.J., assignor to Rutgers Research & Educational Foundation, New Brunswick, N.J.

Continuation-in-part of Ser. No. 307,589, Oct. 1, 1981, abandoned. This application Dec. 28, 1983, Ser. No. 566,182
Int. Cl.³ A23L *1/16*
U.S. Cl. 426—557 13 Claims

1. A process for making quick-cooking pasta comprising the steps of:

(a) combining flour, water, a carbonate selected from the group consisting of edible ammonium carbonate and edible encapsulated alkali metals and an acidic leavening salt, to form a dough,

(b) extruding the dough through an extrusion cooker under conditions of pressure and temperature sufficient to permit the carbonate to react with the acidic leavening salt and to at least partially gelatinize the starch in the flour while forming the dough, and

(c) drying the extruded formed pasta.

4,469,712

DRY INSTANT PUDDING MIX

Jay H. Katcher, Dover, Del., and Frank DelValle, Croton-on-Hudson, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,684
Int. Cl.³ A23L *1/187*
U.S. Cl. 426—579 5 Claims

1. An improved dry instant pudding mix that disperses and hydrates in a rapid and uniform manner to produce a smooth and creamy textured, glossy pudding comprising:

(A) a pregelatinized starch component wherein:

(i) said pregelatinized starch is between about 5% and about 25%, by weight, of the pudding mix,

(ii) between at least 1% and up to 10%, by weight, of said pregelatinized starch has a particle size distribution greater than about 63 microns, but

(a) less than about 1%, by weight, of said pregelatinized starch component has particle sizes greater than about 105 microns,

(b) less than about 3%, by weight of said pregelatinized starch component has particle sizes greater than about 88 microns, and

(c) less than about 6%, by weight of said pregelatinized starch component has particle sizes greater than about 74 microns,

(iii) between about 55% and about 80%, by weight, of said starch component has particle sizes less than about 38 microns;

(B) a sugar component wherein:

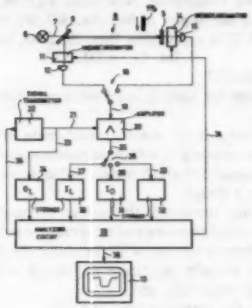
(i) said sugar component is between about 25% and about 85%, by weight of the pudding mix,
(ii) between about 15% and about 40% of said sugar component is powdered sugar, and
(iii) at least about 90% of the sugar component has particle sizes less than about 74 microns;
(C) a setting component wherein between about 1% and about 5%, by weight of the pudding mix is said setting component and said setting component consists essentially of an alkali pyrophosphate and an alkali orthaphosphate; and
(D) a flavoring component.

4,469,713

METHOD OF AND PHOTOMETRIC ARRANGEMENT FOR MEASURING AND CONTROLLING THE THICKNESS OF OPTICALLY EFFECTIVE COATINGS

Horst Schwiecker, Kahl am Main, and Alfons Zöller, Bad-Soden Salmünster, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,238
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1981, 3135443
Int. Cl.³ G05D *5/03*; G05F *1/66*; B05D *1/00*
U.S. Cl. 427—10 **2 Claims**



1. A method of measuring and controlling the thickness of optically transparent coatings during their build-up on substrates in vacuum coating apparatus, comprising the steps of: determining at least one reference value and at least one measured value for the transmission or reflection behavior of the coated object with a measuring light beam, a monochromator, a photo-receiver, an amplifier and an analyzing curcuit;
providing an adjustable amplifier having a degree of amplification G, which has a linear characteristic over at least two powers of ten with a deviation of at most 2%; forming for calibration purposes at each wavelength a first reference value I_L in:
transmission measurement by measuring unimpaired measuring light beam or only the measuring light beam passing through an uncoated test glass, or reflection measurement by measuring the measuring light beam reflected from an uncoated test glass having a diffuse rear surface;
increasing the degree of amplification G in the case of an uncoated test glass until said first reference value I_L reaches substantially a maximum;
storing in respective storages the maximum reference value for I_L and the associated degree of amplification for the uncoated test glass:
forming a second reference value I_o during:
transmission measurement by disconnecting the amplifier input or by introducing a zero shutter into the measuring light beam;
reflection measurement by introducing a zero shutter into the measuring light beam;
amplifying the second reference value I_o to the same degree as the first reference value I_L, and storing in a further storage, so that all of the quantities G_L, I_L and I_o are then stored proportionally to the associated wavelength, and in that for measuring purposes at each wavelength, forming a measured value I, transmission T or reflection R for measuring at each wavelength, stored values for I_L and I_o as well as the value for I being retrieved from a computer unit, and then
determining absolute transmission T in accordance with the relationship

$$T=(I-I_o/T_L)/(I_L-I_o)$$

or determining reflection R in accordance with the relationship

$$R=(I-I_o/R_L)/(I_L-I_o)$$

wherein
I is the measured value for the coated object as measured at the photo-receiver,
R_L is the reflection of the uncoated test glass, and
T_L is the transmission of the uncoated test glass, or is 1.0 if no test glass is present,
retrieving stored value for GL from the computer unit and determining variable degree of amplification G in accordance with the relationship
$G=GL\cdot T_L$ for the transmission
$G=GL\cdot R_l$ for the reflection
measured value I being amplified by the degree G and being presented in dependence upon the wavelength.

4,469,714

COMPOSITION FOR BONDING ELECTROCONDUCTIVE METAL COATING TO ELECTRICALLY NONCONDUCTIVE MATERIAL

Masatoshi Wada, Kishiwada; Nobuyuki Konaga, Osaka; Kenichi Nishiwaki, Daito, and Yasuhiro Kobori, Higashiosaka, all of Japan, assignors to Okuno Chemical Industry Co., Ltd., Osaka, Japan

Filed Sep. 2, 1983, Ser. No. 528,801
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **13 Claims**

1. An activating undercoat composition of the solvent free type for forming an electroconductive metal coating on an electrically nonconductive base material by chemical plating, the composition comprising about 15 to about 75% by weight of a thermosetting or ultraviolet-curable resin, about 24.5 to about 84.5% by weight of finely divided heat-resistant inorganic substance and about 0.5 to about 20% by weight of a finely divided palladium catalyst.

4,469,715

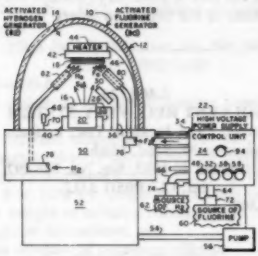
P-TYPE SEMICONDUCTOR MATERIAL HAVING A WIDE BAND GAP

Arun Madan, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 234,287, Feb. 13, 1981,. This application Jun. 20, 1983, Ser. No. 505,824
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—74 **22 Claims**

1. A method for producing an amorphous layer of p-type semiconductor alloy having a wide band gap comprising the steps of:
a. depositing a layer of silicon;
b. incorporating a p-type dopant in said silicon;

c. incorporating at least one density of states reducing element in said layer of silicon; and



d. introducing nitrogen as a band gap increasing element into said layer.

4,469,716

PROCESS FOR THE APPLICATION OF SOLDER ON PRINTED CIRCUIT BOARDS AND PROCESS FOR THEIR PLACEMENT IN AND REMOVAL FROM THIS DEVICE

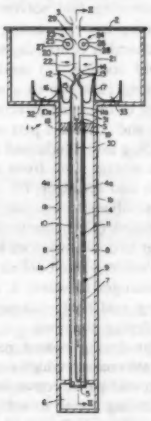
Hans P. Caratsch, Bremgarten, Switzerland, assignor to Sinter Limited, Bristol, England

Division of Ser. No. 300,971, Sep. 9, 1981, Pat. No. 4,414,914. This application Sep. 30, 1982, Ser. No. 431,093

Claims priority, application Switzerland, Sep. 9, 1980, 6760/80

Int. Cl.³ H05K 3/22

U.S. Cl. 427—96 **5 Claims**



1. A process for applying solder to a printed circuit board, said process comprising:

vertically downwardly introducing a printed circuit board through an open upper end of a solder bath container containing a solder bath, thereby applying solder to said printed circuit board, and then vertically upwardly withdrawing said printed circuit board from said solder bath through said open upper end of said solder bath container; and

guiding said vertically downward and upward movements by loosely contacting only opposite sides of said printed circuit board and without contacting lateral edges thereof by means of a guide system, while simultaneously centering said printed circuit board, in opposite directions transverse to the vertical plane thereof, by means of said guide system.

4,469,717

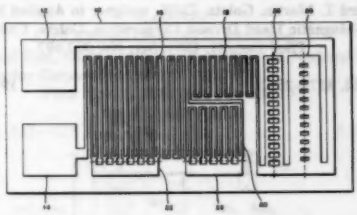
THIN FILM RESISTANCE THERMOMETER WITH A PREDETERMINED TEMPERATURE COEFFICIENT OF RESISTANCE AND ITS METHOD OF MANUFACTURE

Ronald D. Baxter, and Paul J. Freud, both of Furlong, Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Division of Ser. No. 126,068, Feb. 29, 1980, Pat. No. 4,375,056. This application Nov. 2, 1981, Ser. No. 317,030

Int. Cl.³ B05D 5/12

U.S. Cl. 427—102 **9 Claims**



1. A method for making a resistance thermometer element comprising the steps of:

providing an electrically insulating substrate; and

producing a thin platinum film deposit on said substrate in a pattern to produce a desired ice point resistance and in a film thickness as required to produce a desired TCR, said thickness being in a range such that the ratio of relative change of TCR to relative change in film thickness is greater than 0.01.

8. A method for making a resistance thermometer element comprising the steps of:

providing an electrically insulating substrate; and

producing a thin platinum film deposit on said substrate in a pattern to produce a desired ice point resistance with the film thickness between 0.05 and 0.8 microns as required to produce a desired TCR and be below the thickness at which the metal has its bulk value and substantially above the thickness at which nucleation effects predominate in determining those characteristics of the film relating to its conductivity and its TCR.

4,469,718

PROCESS FOR MANUFACTURING POLYESTER RESIN INSULATED WIRES

Isao Shirahata, Chigasaki; Nobuyuki Nakamura, Fujisawa; Shigeharu Shioya, Hiratsuka, and Hisako Hori, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 204,474, Nov. 6, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,667

Claims priority, application Japan, Nov. 14, 1979, 54-147227

Int. Cl.³ H01B 7/00

U.S. Cl. 427—120 **23 Claims**

1. A process for manufacturing a polyester resin insulated wire comprising coating a resin composition consisting essentially of a saturated substantially linear polyester resin prepared by reacting (i) an acid consisting essentially of an aromatic dicarboxylic acid or a dicarboxylic acid in which an aliphatic dicarboxylic acid is substituted for part of the aromatic dicarboxylic acid, and (ii) an alcohol consisting essentially of an aliphatic diol or an aromatic diol on a conductor having a copper surface without use of a solvent and heating the coated conductor in oxygen or an oxygen-containing gas at a temperature higher than the melting point of said linear polyester resin to cause cross-linking of said resin.

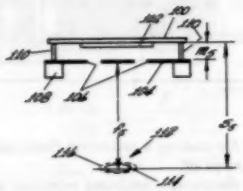
16. A process for manufacturing a polyester resin insulated wire comprising coating a resin composition consisting essentially of a polyester resin selected from the group consisting of polyethylene terephthalate, polybutylene terephthalate, polyethylene naphthalate and poly-2,2-bisparaphenylenepropylidene terephthalate on a conductor having a copper surface without the use of a solvent and heating the coated conductor in oxygen or an oxygen-containing gas at a temperature higher than the melting point of said resin to cause cross-linking of said resin.

4,469,719

METHOD FOR CONTROLLING THE EDGE GRADIENT OF A LAYER OF DEPOSITION MATERIAL

Richard T. Martin, Goleta, Calif., assignor to Applied Magnetics-Magnetic Head Divison Corporation, Goleta, Calif.

Filed Dec. 21, 1981, Ser. No. 332,497
Int. Cl.³ C23C 13/06
U.S. Cl. 427—255.5 19 Claims



1. A method for controlling the edge gradient of a layer of material deposited through a preformed mask onto a substrate wherein the substrate-to-mask distance is fixed comprising the steps of

forming a flux of material to be deposited onto a said substrate wherein the flux of material has a distribution characteristic along a plurality of predetermined paths emanating from at least one source having a known cross-sectional area and shape and located at a selected source position wherein the mask-to-source distance is fixed;

aligning a preformed mask having a plurality of apertures extending therethrough which define a pattern for the layer of material to be deposited onto a said substrate such that the preformed mask is in a spaced relationship from a said at least one source of the flux of material located at said selected source position defining a mask-to-source distance and positioned in said flux of material to permit selected portions of said flux of material along the predetermined paths to pass through said apertures in the preformed mask;

registering a substrate in a spaced relationship from the preformed mask defining a mask-to-substrate distance to permit the selected portions of said flux of material passing through the apertures in said preformed mask to impinge onto said substrate to form a layer of material thereon having a pattern defined by the apertures in said preformed mask, the substrate-to-mask distance, the mask-to-source distance and the cross-sectional area and shape of the effective source producing the flux of material;

controlling the cross-sectional area and shape of said effective source, the magnitude of the substrate-to-mask distance or the magnitude of the mask-to-source distance to direct the selected portions of said flux of material through each aperture at a controlled shift displacement onto the substrate forming a variable flux density of material at the surface of the substrate to define edges on the layer forming said pattern which extend from the extremities of the layer defining the pattern to the central portion of the layer defining the pattern wherein the thickness of the deposited layer of material decreases from the central portion of the layer to the extremities of the layer in a controlled gradient to produce an edge on the deposited layer of material having a desired edge gradient; and

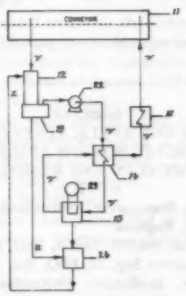
varying the effective source cross-sectional area and shape producing the flux of material to control the slopes of the edge gradient of the deposited layers.

4,469,720

SOLVENT RECOVERY SYSTEM

Thomas E. Morris, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 8, 1982, Ser. No. 366,497
Int. Cl.³ B05D 3/12
U.S. Cl. 427—345 3 Claims



1. A method of drying parts which have been coated with a paint formulation containing a chlorinated organic hydrocarbon solvent and recovering said solvent used in said paint formulation which comprises (1) passing solvent-lean heated air through a drying chamber containing said parts to vaporize said solvent from said coating, (2) sending solvent-rich air exiting from said drying chamber to a scrubber where it is contacted with a spray of the same solvent to remove particulate matter therefrom and condense part of said solvent vapor from said air, (3) sending said condensed solvent to a holding tank and thence to a storage tank from whence part of said solvent is recycled to said scrubber, (4) sending the solvent-rich air exiting said scrubber to one side of a cross-heat exchanger where it is cooled, (5) further cooling said air in a low temperature condenser to condense more solvent vapors therefrom and passing said solvent-lean cool air to the opposite side of said cross-heat exchanger to warm it, and (6) heating said solvent-lean air exiting said heat exchanger before (7) recycling said air to said drying chamber.

2. An apparatus for drying coated parts and recovering solvent employed in said coating which comprises in combination means for coating said parts, conveyor means for moving said parts from said coating means to a drying chamber, heating means for heating air, conduit means entering said drying chamber and in communication with said heating means for conducting solvent-lean air into said drying chamber, conduit means exiting said drying chamber, for conducting solvent-rich air therefrom, in communication with a scrubber having means for contacting said solvent-rich air with liquid solvent, said scrubber being in communication with a holding tank, said holding tank having conduit means to a storage tank, said storage tank having conduit means therefrom for recycling said stored solvent in said holding tank to said scrubber, said scrubber further having conduit means in communication with condensing means for condensing said solvent from said solvent-rich air exiting said scrubber, said condensing means having liquid conduit means to said storage tank and having vapor conduit means to said heating means.

4,469,721

HIGH EMISSIVITY REFRACTORY COATING, PROCESS FOR MANUFACTURING THE SAME, AND COATING COMPOSITION THEREFOR

Kiyohiko Shioya, No. 19-7, Azabujuban 2-chome, Minato-ku, Tokyo, Japan

Filed Jun. 6, 1983, Ser. No. 501,360
Int. Cl.³ C09D 1/02
U.S. Cl. 427—397.8 9 Claims

1. A high emissivity refractory coating composition, comprising:

a powder mixture comprised of 17 to 22% by weight of silicon carbide, 6 to 11% by weight of graphite, 17 to 22% by weight of aluminum oxide, 2 to 5% by weight of silicon nitride, 8 to 12% by weight of tricobalt tetroxide, 18 to 22% by weight of cobalt aluminum oxide and 18 to 23% by weight of ferrosilicon; and

an aqueous solution of potassium silicate.

5. A process for manufacturing a high emissivity refractory coating, comprising the steps of:

mixing a powder mixture containing 17 to 22% by weight of silicon carbide, 6 to 11% by weight of graphite, 17 to 22% by weight of aluminum oxide, 2 to 5% by weight of silicon nitride, 8 to 12% by weight of tricobalt tetroxide, 18 to 22% by weight of cobalt aluminum oxide and 18 to 23% by weight of ferrosilicon, and an aqueous solution of potassium silicate to prepare a suspension;

applying the suspension to the surface of a material in order to form a refractory coating thereon; and

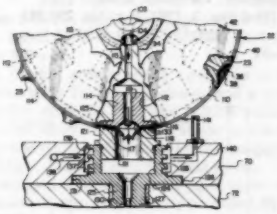
drying the coating for curing it.

4,469,722

REPETITIVE COMBUSTION COATING APPARATUS

Glen Danielson, and Clyde H. Riley, both of Houston, Tex., assignors to H. B. Zachry Company, San Antonio, Tex.

Filed Sep. 23, 1982, Ser. No. 422,166
Int. Cl.³ B05D 1/10
U.S. Cl. 427—423 31 Claims



22. A method for operating a repetitive combustion coating apparatus for delivering discrete quantities of particulate material entrained in a stream of combustion gases to a work piece, said apparatus comprising means forming a combustion chamber, means for introducing a fuel-air mixture into said combustion chamber including a first valve operable to be opened to admit said mixture to said combustion chamber, means for successively positioning a plurality of spaced apart capsules formed on an encapsulating tape, said capsules each including premeasured quantities of particulate material, actuating means for said positioning means, a second valve for controlling the delivery of high pressure gas to said positioning means to burst a capsule to inject the particulate material encapsulated by said tape into said combustion chamber, ignition means for igniting said mixture, and control means for providing control signals to operate said first and second valves, said actuating means and said ignition means: said method including the steps of:

actuating said positioning means to position one of said capsules for injection of a quantity of particulate material into said combustion chamber;

producing signals with said control means to sequentially open said first valve to admit a flow of said mixture to said combustion chamber when said capsule is positioned for stripping and substantially simultaneously close said first valve and open said second valve to admit pressure gas to burst said capsule in position to be stripped, and

igniting said mixture in said combustion chamber after commencement of the admission of pressure gas to burst said capsule while continuing to admit pressure gas to strip said material from said capsule;

ceasing the admittance of pressure gas after a predetermined time period; and

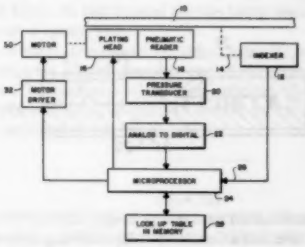
actuating said positioning means to place another capsule in position for stripping said particulate material.

4,469,723

PLATING CONTROL SYSTEM

Nadeemul Haq, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 1, 1982, Ser. No. 438,107
Int. Cl.³ B05D 1/26
U.S. Cl. 427—437 4 Claims



1. A method of positioning a plating head relative to a web of material to be plated in which a stream of fluid is directed against an aperture in the web, and the back pressure in said stream is measured as an indication of the relative alignment between the stream and the aperture, and in which the plating head is adjustable so as to cause the back pressure to be a predetermined amount, comprising the steps of:

A. intermittently moving the web relative to said head;

B. waiting an interval of time after the web has stopped moving relative to the head so as to allow the back pressure to stabilize;

C. measuring the back pressure and converting the measurement to a digital signal representative of the pressure;

D. comparing said digital signal to a table in memory to determine the error in position; and

E. moving the plating head in a single movement by an amount sufficient to correct said error in position.

4,469,724

METHOD OF PROTECTING OPTICAL FIBRE AGAINST STRESS CORROSION

Liliana Klinger, Wall, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 29, 1983, Ser. No. 508,957
Int. Cl.³ B05D 3/06
U.S. Cl. 427—54.1 6 Claims

1. Method of protecting optical fibre against stress corrosion, said method including the steps of

(A) drawing the fibre from a preform,

(B) coating the drawn fibre in line in a nitrogen atmosphere with a mixture of an ultraviolet curable cis, trans fluoropolyolacrylate in which the modulus is reduced by eliminating about 25 percent of the pendant ester groups

and ultraviolet catalyst for the cis, trans fluoropolyolacrylate,

(C) passing the coated fibre through an ultra violet light source to cure the resin and form a primary coating while maintaining the nitrogen atmosphere,

(D) coating the primary coating with a secondary coating of a member of the group consisting of a high modulus fluoroepoxy to which a curing agent has been added and a high modulus cis, trans fluoropolyolacrylate to which an ultraviolet catalyst has been added, and

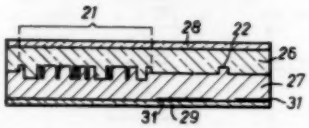
(E) curing the coating of step (D).

4,469,725

IDENTIFICATION CARD

Paul Fischer, Uitikon/Waldegg, and Etienne Ponato, Wallisellen, both of Switzerland, assignors to FIS Organisation AG, Zurich, Switzerland

Filed Sep. 14, 1982, Ser. No. 417,880
Int. Cl.³ B32B *3/30, 27/08*
U.S. Cl. 428—13 **11 Claims**



1. An identification card comprising:

at least a first and second plastic layer having different optical properties and having embossed and debossed formations formed thereon, said embossed and debossed formations further comprising complementary, interlocking formations for forming mutually joinable surfaces of said at least first and second plastic layers such that said at least first and second plastic layers are joined to form a monolithic laminate forming an image visible in transmitted light passed through said embossed and debossed formations, said image having different optical properties from the remainder of the card.

4,469,726

DECORATIVE ILLUMINATION SETUP

Henrik Niinivuo, Peltopirtinkatu Kesäranta, Tampere 40, Finland

PCT No. PCT/FI81/00028, § 371 Date Dec. 9, 1982, § 102(e) Date Dec. 9, 1982, PCT Pub. No. WO82/03602, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 10, 1981, Ser. No. 448,919
Int. Cl.³ A01K *63/00*; B44F *1/00*
U.S. Cl. 428—13 **10 Claims**

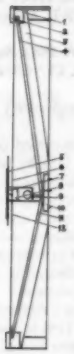
1. A decorative illumination setup for use in a room comprising:

a setup body supporting two background boards;

a surface plate of glass and a silhouette picture each arranged in spaced relation to said background boards;

an illumination apparatus positioned behind said silhouette picture and between said surface plate and said background boards so that light from said illumination apparatus will be silhouetted by said silhouette picture and reflected from said background boards through said surface plate into the room; and,

means for supporting said surface plate, said silhouette picture and said illumination apparatus on said setup body along with said two background boards, said background



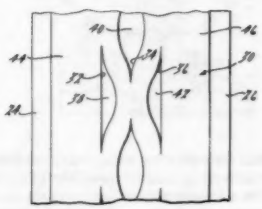
boards being at different angles in relation to said surface plate so as to create a three dimensional impression.

4,469,727

AUTOMOTIVE TRIM STRIP WITH EXPANDED PRESSURE SENSITIVE TAPE

Theodore Loew, Schenectady, N.Y., assignor to The Standard Products Company, Cleveland, Ohio

Filed Sep. 2, 1981, Ser. No. 298,911
Int. Cl.³ B32B *3/24*
U.S. Cl. 428—31 **2 Claims**



1. A vehicle trim strip comprising a vinyl extrusion and an expanded adhesive strip on a surface thereof, said expanded adhesive strip comprising a plurality of laterally spaced longitudinally extending slots having a substantial lateral dimension, said laterally-spaced slots overlapping one another longitudinally of said trim strip to provide angularly related connecting portions of said adhesive strip on opposite sides of the longitudinally spaced slots, said plurality of slots further being laterally spaced for at least one longitudinally-extending side edge of said adhesive strip to provide at least one longitudinally-extending continuous region of said adhesive strip of a width greater than said angularly related connecting portions adjacent at least one longitudinally side edge of the vehicle trim strip, said slots accommodating flexure of the vehicle trim strip as it is adhesively mated with the contours of a vehicle to which it is applied.

4,469,728

COMPOSITE FOIL, PARTICULARLY A TOILET SEAT SUPPORT, AS WELL AS PROCESS

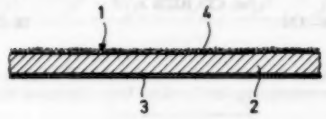
Roland K. Belz, Leinfelden-Echterdingen, Fed. Rep. of Germany

Filed Dec. 30, 1980, Ser. No. 221,288

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000516

Int. Cl.³ A47K *13/14*

U.S. Cl. 428—36 29 Claims



1. In a composite foil formed from at least two layers in which at least one, normally water-insoluble sealing layer is connected to at least one water soluble layer, said water soluble layer containing a solubilizer for said water-insoluble sealing layer, the improvement wherein said water-insoluble sealing layer comprises a non-porous layer formed by extrusion of a thermoplastic material which is soluble in a non-neutral medium, and said water soluble layer comprises a layer formed by extrusion of a thermoplastic material which is (i) water soluble or (II) water insoluble, but soluble in a non-neutral medium, and wherein said solubilizer is present in an amount sufficient for solubilizing said water insoluble layer and said water soluble layer when the latter is also formed by extrusion of a water insoluble thermoplastic material.

4,469,729

ARTICLE HAVING HARD FILM, A FLEXIBLE BODY AND A FIBER LAYER DISPOSED THEREBETWEEN

Shigetaka Watanabe; Masahiro Suzuki, both of Hitachi, and Yoshiaki Matsuga, Mito, all of Japan, assignors to Hitachi Cable Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,212

Claims priority, application Japan, Jun. 11, 1981, 56-90038

Int. Cl.³ B29H *7/22*; B65G *15/32*; F16G *1/06, 1/14*; F16L *11/08*

U.S. Cl. 428—36 24 Claims

1. A flexible article which comprises a soft and flexible rubberlike body having a thickness; and a hard, stiff and thin surface film arranged over said flexible rubberlike body, said surface film being thin in comparison to the thickness of said flexible rubberlike body and comprising a plastic film or a film containing a complex of plastic and metal,

the improvement wherein a fiber layer comprising non-woven or woven fabrics is provided by adhesion at the interface between said surface film and said flexible rubberlike body.

4. The flexible article as claimed in any one of claims 1 to 3, wherein the rubberlike body is in the form of a hose.

9. The flexible article as claimed in any one of claims 1 to 3, wherein the rubberlike body is in the form of a handrail for use in escalators or automatic lines.

12. The flexible article as claimed in any one of claims 1 to 3, wherein the rubberlike body is in the form of a belt for use in a power transmission or an article transport.

4,469,730

COMPOSITE BASE STRUCTURE AND END FITTING JOINT AND METHOD

Frank M. Burhans, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1982, Ser. No. 454,603

Int. Cl.³ B32B *5/12*

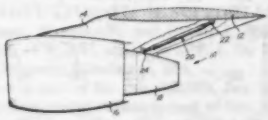
U.S. Cl. 428—36 23 Claims

1. A base structure and end fitting having a strong joint in which the base structure and joining structures are made from fiber reinforced material, comprising:

an elongated base structure having a wall formed of a cured epoxy reinforced with layers of fibers extending in an elongated direction and in a transverse direction;

layers of said fibers in the elongated direction and transverse direction of said wall extending onto a large diameter end of a conical end portion of an end fitting and on the conical portion to terminate substantially adjacent a small diameter portion of the conical portion;

layers of said elongated and transverse fibers being interlayered with layers of fibers generally circumferentially



wrapped on said conical portion; tensile or pull apart forces applied axially to the end fitting being resisted by hoop tension in the circumferentially wrapped fibers;

said layers on said conical portion being impregnated with a cured epoxy; and

an annular transverse shoulder extends outwardly from adjacent a small diameter end of the conical portion;

fibers on said conical portion abutting the shoulder, the shoulder being adapted to receive compression forces in the fibers.

4,469,731

COMPOSITE INSULATING ARTICLE FOR MAKING PREFABRICATED COVERINGS

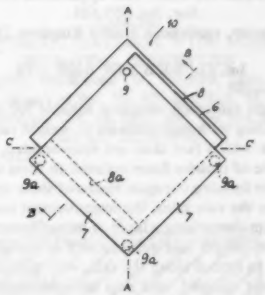
Paolo Saracino, Bussolengo, Italy, assignor to NORD BITUMI di Marco Danese & C. s.a.s., Verona, Italy

Filed Sep. 22, 1981, Ser. No. 304,813

Claims priority, application Italy, Jul. 2, 1981, 22713 A/81

Int. Cl.³ E04C *2/34*

U.S. Cl. 428—68 7 Claims



1. In a composite covering element, which consists of a stratified coherent structure comprising an outer self-protecting membrane, and comprising an insulating layer on its lower surface, said insulating layer further comprising a waterproofing and self-adhesive layer on its lower surface, said outer self-protecting membrane comprising a bituminuous support provided with an outer protective coating, the improvement wherein said composite covering element is made in the shape of identical modular panels, wherein the waterproofing and self-adhesive layer and the self-protecting membrane of each panel are each provided with at least one projecting portion for attaching and fixing it to a further modular panel.

4,469,732

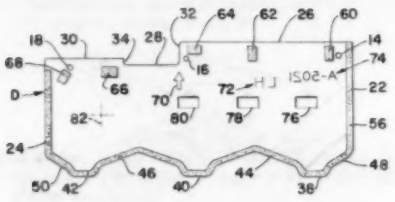
WATER DEFLECTOR FOR VEHICLE DOORS

Robert A. Isaksen, Chardon; David E. Frappier, Mayfield Hts., and Wallace R. Jones, Waite Hill Village, all of Ohio, assignors to The Excello Specialty Company, Cleveland, Ohio

Filed Sep. 7, 1982, Ser. No. 415,228

Int. Cl.³ B32B *3/02, 3/10*

U.S. Cl. 428—80 16 Claims



1. A water deflector for application to the inner panel of a vehicle door or the like to prevent water from entering the vehicle body or wetting the inner door trim panel comprising:

a flat and flexible sheet of plastic material having a peripheral shape generally matching the peripheral configuration of the inner panel of a vehicle door, said sheet having top, bottom, and opposite side edges, a plurality of spaced-apart pin receiving holes in said sheet generally adjacent said top edge for receiving pins to achieve registration between a plurality of like sheets stacked on top of one another, and permanently plastic pressure sensitive adhesive bonded to one face of said sheet in strips adjacent said edges, said adhesive covering a minor portion of the surface of said one face.

4,469,733

FOAM SANDWICH CONSTRUCTION

Robert M. Seddon, Knaresborough, England, assignor to Unitex Limited, Yorkshire, England

Continuation of Ser. No. 285,095, filed as PCT GB80/00216, Dec. 16, 1980, published as WO81/01815, Jul. 9, 1981, § 102(e) date Jul. 16, 1981. This application Feb. 6, 1984, Ser. No. 577,601

Claims priority, application United Kingdom, Dec. 28, 1979, 7944417

Int. Cl.³ B32B *5/08;* B22B *5/12*

U.S. Cl. 428—109 14 Claims

1. In a foam sandwich structure suitable for use as a load bearing cladding with high stiffness to weight ratio and being of the type in which two skins are resin-bonded, one on each side, to a core of plastics foam material to form the sandwich with said core forming the main means of shear stress transference between the two skins, the improvement comprising:

(a) each skin comprising a layer of monofilaments of at least 10 cm in length laid substantially in parallel with one another to extend along the skin, with directional change being kept minimal, said skin monofilaments being non-sinuous and not woven;

(b) a mat of randomly arranged monofilaments interposed between the foam core and each adjacent monofilament skin layer; and

(c) said filaments of said skin and said mat being bound to one another and to adjacent layers of the sandwich structure by a thermosetting resin, wherein the resin is present in a quantity sufficient to wet the filaments but not in excess, the ratio of resin to monofilament being less than 1.75:1 by weight throughout the layer of monofilaments forming each skin, and the ratio of resin to monofilament being less than 2:1 by weight throughout the sandwich structure as a whole, whereby a sandwich structure of improved load bearing strength is provided.

4,469,734

MICROFIBRE WEB PRODUCTS

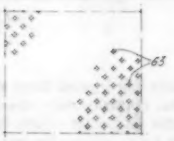
Mansoor A. Minto, Larkfield, and Dennis G. Storey, Bearsted, both of England, assignors to Kimberly-Clark Limited, Kent, England

Continuation of Ser. No. 444,232, Nov. 24, 1982, abandoned. This application Jan. 16, 1984, Ser. No. 570,445

Claims priority, application United Kingdom, Nov. 24, 1981, 8135330

Int. Cl.³ B32B *3/10*

U.S. Cl. 428—134 10 Claims



1. A nonwoven fabric consisting of a web comprising melt-blown thermoplastic microfibers and including thermal bond areas formed or provided with apertures penetrating through the fabric within substantially all of the thermal bond areas wherein the fibers are bonded together around the circumference of the bond areas, said apertures constituting between 1 and 40% of the surface area of the fabric.

4,469,735

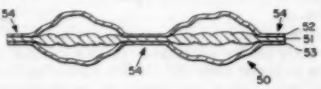
EXTENSIBLE MULTI-PLY TISSUE PAPER PRODUCT

Paul D. Trokhan, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 15, 1982, Ser. No. 358,544

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—154 33 Claims



1. An extensible multi-ply tissue paper product comprising a first ply and a second ply of tissue paper in associated relation with substantial juxtaposed portions thereof not adhered together, said plies comprising tissue papers having greater than ten percent extensibility in the primary direction of said product and having elongation at rupture values in said primary direction that are sufficiently close in value that said product has a monomodal stress/strain character in said primary direction, said first ply having a sufficiently higher stress/strain property than said second ply that unadhered portions of said second ply will pucker in the Z-direction of the product when the product is wetted.

4,469,736

PLANAR ELEMENT FOR THE ABSORPTION OF AIR-TRANSMITTED SOUND AND METHOD OF MANUFACTURING THE SAME

Walter Machholz, Memmingen, Fed. Rep. of Germany, assignor to Metzeler Schaum GmbH, Munich, Fed. Rep. of Germany

Filed May 20, 1983, Ser. No. 496,663

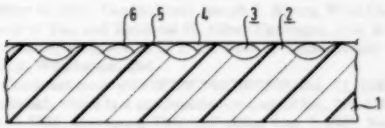
Claims priority, application Fed. Rep. of Germany, May 22, 1982, 3219339

Int. Cl.³ B32B *3/30, 7/10*

U.S. Cl. 428—159 5 Claims

1. Planar element for the absorption of air-transmitted

sound, comprising a flexible layer of open-cell foam material including a surface having protuberances with peaks formed



thereon, and a flat closed cover layer formed of synthetic foil material fastened to said peaks of said protuberances.

4,469,737

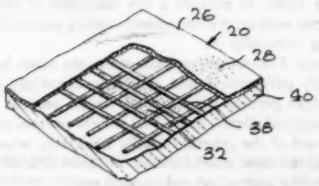
PROCESS FOR LAMINATING MIRROR WITH PROTECTIVE BACKING AND PRODUCT RESULTING THEREFROM

Don S. Kain, Los Angeles County, Calif., assignor to Monarch Mirror Door Co., Inc., Chatsworth, Calif.

Filed Sep. 30, 1982, Ser. No. 429,549

Int. Cl.³ B32B *17/10, 27/34*

U.S. Cl. 428—198 **15 Claims**



1. A process for laminating a
protective backing onto a mirror comprising a flat layer of glass panel having reflective coating on the back thereof to form a mirror panel with a back, comprising the steps of:
providing a web of paper having a face;
coating the face of the paper web with a thermoplastic adhesive;
supplying an open, flexible scrim fabric layer;
applying the scrim to the back of the mirror panel;
applying the face of the paper web to the scrim web;
heating the thermoplastic adhesive sufficiently warm to be plastic; and
in a single step applying pressure to force both the scrim web and paper web at the same time into adhesive attachment with the back of the glass panel.

4,469,738

ORIENTED NET FURNITURE SUPPORT MATERIAL

Louis E. Himelreich, Jr., Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 460,098, Jan. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 407,646, Aug. 12, 1982, abandoned. This application Jul. 26, 1983, Ser. No. 516,516

Int. Cl.³ A47C *7/32, 23/18, 23/22, 31/00*

U.S. Cl. 428—198 **23 Claims**

1. A furniture support material in a net configuration comprising crossed strands of oriented thermoplastic elastomer selected from the group consisting of copolyetheresters, polyurethanes and polyesteramides, which strands are bonded to each other at the points at which they cross, which furniture material has a tear resistance value of at least 0.40 joules/meter-gram/meter^2, has a dead load static creep K-factor value of less than 6000 percent change in deflection-grams/meter^2, has a deflection value of 1.25–7.50 cm, and has a dynamic creep K-factor value of less than 5000 percent change in deflection-grams/meter^2.

20. A seat bottom made from the furniture support material of claim 1.

21. A seat back made from he furniture support material of claim 1.

22. A bedding support system made from the furniture support material of claim 1.

4,469,739

ORIENTED WOVEN FURNITURE SUPPORT MATERIAL

James Gretzinger, Washington, and Robert L. Rackley, Parkersburg, both of W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 460,099, Jan. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 407,647, Aug. 12, 1982, abandoned. This application Jul. 26, 1983, Ser. No. 516,517

Int. Cl.³ A47C *7/32, 23/18, 23/22, 31/00*

U.S. Cl. 428—198 **26 Claims**

1. A furniture support material in a woven configuration comprising crossed strands in a first direction and in a second direction perpendicular to the first direction, wherein the strands in the first direction comprise oriented thermoplastic elastomer monofilament selected from the group consisting of copolyetheresters, polyurethanes and polyesteramides, and the strands in the second direction comprise yarn, which crossing strands are affixed to each other at the points at which they cross, which furniture material has a tear resistance value of at least 0.40 joules/meter-gram/meter^2, has a dead load static creep K-factor value of less than 6000 percent change in deflection-grams/meter^2, has a deflection value of 1.25–7.50 cm, and has a dynamic creep K-factor value of less than 5000 percent change in deflection-grams/meter^2.

23. A seat bottom made from the furniture support material of claim 1.

24. A seat back made from he furniture support material of claim 1.

25. A bedding support system made from the furniture support material of claim 1.

4,469,740

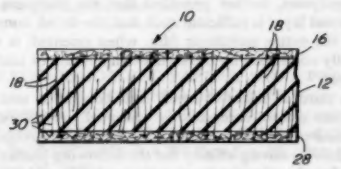
FOAM PLASTIC MATERIAL WITH MOISTURE REMOVING PROPERTIES

Richard L. Bailly, Beechwood Clr., Boxford, Mass. 01921

Continuation-in-part of Ser. No. 470,606, Feb. 28, 1983,. This application Oct. 24, 1983, Ser. No. 544,500

Int. Cl.³ B32B *3/06*

U.S. Cl. 428—212 **15 Claims**



1. A laminate-like structure having a surface conforming substantially to the contours of a surface region of the human body, the structure comprising:
a foamed thermoplastic middle layer having a thermoformed surface conforming to the contours of said body surface region;
a upper layer disposed on said thermoformed surface, comprising a multiplicity of hydrophobic fibers, a substantial fraction of which penetrate said middle layer, said fibers together comprising a non-woven, substantially continu-

ous layer affixed to said middle layer and defining a multiplicity of interstitial spaces; and

a lower layer disposed on the surface of said middle layer opposite said thermoformed surface, and comprising a multiplicity of hydrophilic fibers, a substantial fraction of which penetrate said middle layer and overlap with said hydrophobic fibers,

said layers being effective to cooperate in use to maintain fibers of said upper layer in contact with perspiration from said body surface, and to wick perspiration away from said body surface and through said middle layer.

4,469,741

LAMINATED SHEETS

Mutsuo Akao, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1981, Ser. No. 318,178

Claims priority, application Japan, Nov. 4, 1980, 55-155491

The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ B32B *7/02, 27/40, 27/08*

U.S. Cl. 428—214 **10 Claims**

1. A laminated sheet, comprising:

a first uniaxially molecularly-orientated thermoplastic resin film orientated in a first direction;

a first adhesive layer bonded to said first film;

a porous sheet bonded to said first adhesive layer;

a second adhesive layer bonded to said porous sheet; and

a second uniaxially molecularly-orientated thermoplastic resin film bonded to said second adhesive layer in such a manner that its molecularly-orientated direction crosses said first direction of said first film at an angle of 45° to 90°,

wherein said first and second adhesive layers have a thickness of 7 microns or more.

4,469,742

PASTEURIZABLE, COOK-IN SHRINK FILM

Timothy T. Oberle, Lyman; Henry G. Schirmer; Norman D. Bornstein, both of Spartanburg, and Johnnie J. Walters, Greer, all of S.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Jan. 31, 1983, Ser. No. 461,638

Int. Cl.³ B32B *7/02;* **B65D** *85/72, 65/40*

U.S. Cl. 428—215 **13 Claims**

1. A pasteurizable and/or cook-in shrink film, comprising:

(a) a first or sealing layer which comprises a nonlipophillic polymeric material having a softening point greater than that of the following shrink layer;

(b) a second or shrink layer, melt bonded to said first layer, which comprises a cross-linked ethylene homopolymer or copolymer, further provided that the thickness of said second layer is sufficient such that the shrink temperature of the entire multilayer film, when oriented, is substantially controlled by the shrink temperature of said second layer;

(c) a third or adhesive layer, melt bonded to said second layer, which comprises a chemically modified cross-linked polyethylene and having functional groups with a relatively strong affinity for the following barrier layer;

(d) a fourth or barrier layer, melt bonded to said third layer, which comprises a hydrolyzed cross-linked ethylene-vinyl acetate copolymer;

(e) a fifth or adhesive layer of substantially the same composition as said third layer, melt bonded to said fourth layer; and

(f) a sixth or abuse layer comprising a cross-linked polymer, melt bonded to said fifth layer;

(g) wherein all of said layers of said film are irradiatively cross-linked to an extent corresponding to an irradiation dosage sufficient to increase the resistance of the film layers to delamination under cook-in or pasteurizing conditions but which permits the first layer to function as a sealing layer.

4,469,743

POLYVINYL BUTYRAL LAMINATES

Timothy G. Hiss, Vienna, W. Va., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Mar. 14, 1983, Ser. No. 475,078

Int. Cl.³ B32B *17/10, 27/08*

U.S. Cl. 428—215 **27 Claims**

1. A process for preparing a polymeric laminate consisting essentially of:

(a) coating at least one surface of a biaxially oriented, dimensionally stable, polyethylene terephthalate film having a thickness of about 2–7 mils and a haze level of less than about 1.0%, to provide a dry thickness of about 1–20 microns with an organic silanol coating composition consisting essentially of:

(i) about 5–50 weight percent solids, the solids being partially polymerized and consisting essentially of 10–69 weight percent silica; 0.01–4 weight percent of azido functional silanol; and 30–89 weight percent of organic silanol of the general formula $RSi(OH)_3$, wherein R is selected from methyl and up to about 40% of a radical selected from vinyl and phenyl; and

(ii) about 95–50 weight percent solvent, the solvent comprising about 10–90 weight percent water and about 90–10 weight percent lower aliphatic alcohol and containing about 0.01–1.0% non-ionic surfactant; the coating composition having a pH of about 6.2–6.5;

(b) bonding the coated polyethylene terephthalate film at elevated heat and pressure to a sheet of plasticized polyvinyl butyral to provide a laminate in which the surface of the polyethylene terephthalate not bonded to the polyvinyl butyral is coated with the organic silanol composition.

14. A polymeric laminate consisting essentially of,

(a) a sheet of plasticized polyvinyl butyral;

(b) a biaxially oriented, dimensionally stable, polyethylene terephthalate film bonded to the polyvinyl butyral and having a thickness of about 2–7 mils and a haze level of less than about 1.0%, and,

(c) a coating on the polyethylene terephthalate film having a thickness of about 1–20 microns, the coating having been produced from an organic silanol composition consisting essentially of:

(i) about 5–50 weight percent solids, the solids being partially polymerized and consisting essentially of 10–69 weight percent silica; 0.01–4 weight percent of azido functional silanol; and 30–89 weight percent of organic silanol of the general formula $RSi(OH)_3$, wherein R is selected from methyl and up to about 40% of a radical selected from vinyl and phenyl; and

(ii) about 95–50 weight percent solvent, the solvent comprising about 10–90 weight percent water and about 90–10 weight percent lower aliphatic alcohol and containing about 0.01–1.0% non-ionic surfactant; the coating composition having a pH of about 6.2–6.5; and in which at least the surface of the polyethylene terephthalate not bonded to the polyvinyl butyral bears a coating (c).

4,469,744

PROTECTIVE CLOTHING OF FABRIC CONTAINING A LAYER OF HIGHLY FLUORINATED ION EXCHANGE POLYMER

Walther G. Grot, Chadds Ford; Joseph T. Rivers, West Chester, both of Pa., and Raimund H. Silva, Hattingen, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 168,639, Jul. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 138,681, Apr. 9, 1980, abandoned. This application Aug. 7, 1981, Ser. No. 290,866

Int. Cl.³ B32B 7/00, 27/00

U.S. Cl. 428—246 33 Claims

1. Use in protective clothing of a composite fabric, said composite fabric containing in adherent contact at least one layer of component fabric, and, as the essential component thereof, a continuous film of a highly fluorinated ion exchange polymer having at least one kind of functional group selected from the group consisting of the alkali metal salts of, ammonium salts of and amine salts of at least one member of the group consisting of the sulfonic acid, sulfonamide, monosubstituted sulfonamide, carboxylic acid, carboxamide and monosubstituted carboxamide groups, there being at least one fluorine atom attached to each carbon atom to which each said functional group is attached, said polymer having an equivalent weight no greater than about 2000.

4,469,745

CAMOUFLAGE COVERING FOR SNOWY SOILS

Pier L. Robicci, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Jun. 17, 1983, Ser. No. 505,443

Claims priority, application Italy, Jun. 24, 1982, 22037 A/82

Int. Cl.³ F41H 3/00

U.S. Cl. 428—283 7 Claims

1. A flexible camouflage covering adapted for covering objects such as motor vehicles, arms and the like in the presence of snow-covered soils and for impeding visual and photographic observation of said objects, said covering including means for reflecting ultraviolet radiation having a wavelength in the range of 320 to 400 nanometers and maintaining the flexibility of the covering at temperatures as low as −50° C., said means comprising at least a superficial layer of a compound based on a polar polymeric material containing a filler that is stable in a sulphur-containing atmosphere, said filler being selected from the class consisting of titanium salts, silicates and silicon dioxide.

4,469,746

SILICA COATED ABSORBENT FIBERS

Paul T. Weisman, Fairfield, and Herbert L. Retzsch, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 1, 1982, Ser. No. 383,685

Int. Cl.³ D04H 1/58; B32B 5/16

U.S. Cl. 428—289 15 Claims

1. A hydrophilic absorbent fibrous web comprising thermoplastic polymer fibers which are coated with a continuous film consisting essentially of positively charged silica and a crosslinkable cationic polyelectrolyte.

4,469,747

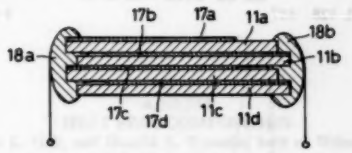
DIELECTRIC FILMS AND PROCESS FOR PREPARING SAME

Tohru Sasaki; Syuuzi Terasaki, and Tomoo Susa, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,639

Int. Cl.³ B32B 5/16, 27/00; B29C 17/02

U.S. Cl. 428—325 30 Claims



1. A dielectric film comprising from about 40 to 97% by volume of a thermoplastic resin, from about 2 to 50% by volume of a ceramic dielectric and from about 1 to 25% by volume of carbon black.

4,469,748

ADHESION OF ARAMID CORDS TO RUBBER

Satish C. Sharma, Mogadore, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jul. 5, 1983, Ser. No. 510,715

Int. Cl.³ D02G 3/00

U.S. Cl. 428—378 28 Claims

1. A method for adhering a poly(p-phenylene terephthalamide) reinforcing element to a rubber compound which comprises (I) treating said element with a composition comprising an aqueous alkaline dispersion of about 10 to 50% by weight of solids comprising (a) a rubbery vinyl pyridine copolymer and (b) a water soluble thermosetting phenolic-aldehyde resin in an amount of from about 3 to 25 parts by weight dry per 100 parts total by weight dry of (a), heating said treated element at a temperature of from about 200° to 600° F. for from about 300 to 5 seconds to remove essentially all of the water from said composition and to provide said element with a heat cured or heat set dry adhesive in an amount of up to about 20% total by weight (dry) based on the weight of said reinforcing element, and (II) combining said dried and heat cured adhesive containing reinforcing element with an unvulcanized vulcanizable rubber compound and vulcanizing the same, said reinforcing element prior to treatment with said composition having been treated in a cold gas plasma for from about 2 seconds to 30 minutes at from about 10 to 300 watts of power where said gas is selected from the group consisting of air, nitrogen, helium, neon and argon and mixture thereof.

4,469,749

METALIZED RECORDING PAPERS, AND A PROCESS FOR THEIR MANUFACTURE

Günther Schwarz, Münster, Fed. Rep. of Germany, assignor to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

PCT No. PCT/DE82/00068, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982

PCT Filed Mar. 24, 1982, Ser. No. 432,946

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112658

Int. Cl.³ B32B 5/16, 19/04; B41M 5/00

U.S. Cl. 428—403 13 Claims

1. In a metalized recording paper comprising a paper base, a firmly adhering varnish coating on said paper base containing materials selected from the group consisting of mineral fillers, pigments, and mixtures thereof and a metal layer on said varnish coating, the improvement comprising:

at least some of said materials covered with a wax coating.

4,469,750

MAGNETIC RECORDING MEDIA COMPRISING FLUORINATED ORGANOSILICONES IN A MAGNETIC LAYER THEREOF

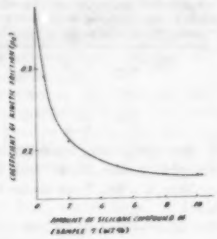
Kuniharu Fujiki; Yukio Matsumoto, and Hiroshi Yoshida, all of Mito, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 27, 1983, Ser. No. 517,711

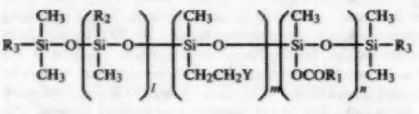
Claims priority, application Japan, Jul. 29, 1982, 57-131151

Int. Cl.³ G11B *5/68, 5/70*

U.S. Cl. 428—447 **6 Claims**



1. A magnetic recording medium which comprises a support having thereon a recording magnetic layer which is made of a dispersion of magnetic particles in a mixture of a binder and a lubricant, the lubricant being a fatty acid-modified, fluorinated organosilicone compound of the following general formula (A)



(A)

in which R_1 represents a monovalent saturated or unsaturated hydrocarbon group having from 7 to 21 carbon atoms, R_2 represents a methyl or phenyl group, each R_3 represents a $OCOR_1$ group wherein R_1 has the same meaning as defined above, Y represents $—CF_3$ or $—(CF_2)_k—W$ in which k is an integer of from 1 to 8, and W represents hydrogen or fluorine, l, m and n are independently an integer provided that $0 \leqq l < 200$, $1 \leqq m < 100$, $1 \leqq n < 100$, and $l+m+n \leqq 300$.

4,469,751

MAGNETIC RECORDING MEDIA COMPRISING SPECIFIC TYPES OF SILICONE LUBRICANTS IN THE MAGNETIC LAYER THEREOF

Osamu Kobayashi, Mito, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

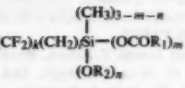
Filed Sep. 20, 1983, Ser. No. 534,114

Claims priority, application Japan, Sep. 21, 1982, 57-163100; Sep. 21, 1982, 57-163101

Int. Cl.³ G11B *5/68, 5/72*

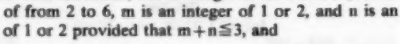
U.S. Cl. 428—447 **6 Claims**

1. A magnetic recording medium which comprises a support and a magnetic layer formed on at least one side of the support and made of magnetic particles dispersed in a mixture of a binder and a lubricant, the lubricant comprising at least one compound selected from the group consisting of silicone compounds of the following formulas (I) and (II)



(I)

in which R_1 represents a saturated or unsaturated monovalent hydrocarbon group having from 7 to 21 carbon atoms, R_2 represents a saturated monovalent hydrocarbon group having from 1 to 4 carbon atoms, k is an integer of from 1 to 12, l is an integer of from 2 to 6, m is an integer of 1 or 2, and n is an integer of 1 or 2 provided that $m+n \leqq 3$, and



(II)

in which R'_1 represents a saturated or unsaturated monovalent hydrocarbon group having from 7 to 21 carbon atoms, R'_2 represents a saturated monovalent hydrocarbon group having from 1 to 4 carbon atoms, j' is an integer of from 1 to 12, $0 \leqq k' < 2$, $0 < m' < 2.5$, $0 < l' \leqq 1$, $0 < n' \leqq 2$, $2 \leqq k'+l'+m'+n' \leqq 3$, and o' is an integer of from 2 to 300 and satisfies the requirement that when multiplied by o', the values k', l', m' and n', respectively, give an integer.

4,469,752

COLD DRAWN HIGH-ORIENTATION MULTILAYERED FILM AND PROCESS FOR MANUFACTURE OF SAID FILM

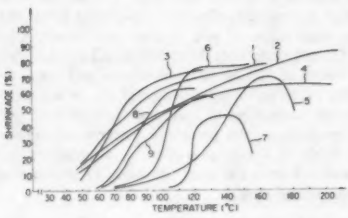
Isao Yoshimura, Kanagawa; Osamu Mizukami, Kawasaki; Hideo Hata; Junichi Kageyama, both of Yokohama, and Takashi Kaneko, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 548,018, Nov. 1, 1983, , which is a continuation-in-part of Ser. No. 316,101, Oct. 28, 1981, abandoned, which is a division of Ser. No. 103,944, Dec. 14, 1979, abandoned. This application Dec. 8, 1983, Ser. No. 559,462

Claims priority, application Japan, Dec. 18, 1978, 53-154966; Mar. 7, 1979, 54-25642

Int. Cl.³ B32B *27/08*

U.S. Cl. 428—475.8 **2 Claims**



1. A cold drawn high-orientation multilayered O_2 barrier film, having a tensile strength of not less than 5.0 Kg/mm^2, the principal component layers of said film being highly oriented, said multilayer film comprising at least one layer preponderantly comprising a cold-drawable resin selected from the group consisting of blended and unblended specific polymers, [1] (B)+(A)+(C), [2] (B)+(A), [3] (B)+(C), [4] (D), and [5] (E), wherein

(A) is at least one ethylene type polymer selected from the group consisting of copolymers of ethylene with another monomer selected from the group consisting of unsaturated carboxylic acids and alkyl esters of said carboxylic acids, ionically crosslinked resins derived from said copolymers and low-density polymers of ethylene,

(B) is a soft copolymer elastomer having a Vicat softening point of not more than 60° C.,

(C) is at least one polymer selected from the group consist-

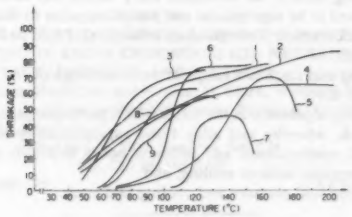
ing of crystalline polypropylene, high-density polyethylene, crystalline polybutene-1 and polymethyl pentene-1,
(D) is a crystalline polybutene-1 having a concentration of 50 to 100% by weight, and
(E) is an ionically crosslinked resin,
said multilayered film consisting of
at least one cold drawable resin layer (CDR) and at least one layer (Br) formed of a polymer possessing an O_2 barrier property, and said film having a multilayer construction represented by the combination of
CDR/Br,
CDR/Br/CDR,
Br/CDR/Br,
Br/CDR/Br/CDR, or
CDR/Br/CDR/Br/CDR.

4,469,753

COLD DRAWN HIGH-ORIENTATION MULTILAYERED FILM AND PROCESS FOR MANUFACTURE OF SAID FILM

Isao Yoshimura, Kanagawa; Osamu Mizukami, Kawasaki; Hideo Hata; Junichi Kageyama, both of Yokohama, and Takashi Kaneko, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 548,018, Nov. 1, 1983, , which is a continuation of Ser. No. 316,101, Oct. 28, 1981, abandoned, which is a division of Ser. No. 103,944, Dec. 14, 1979, abandoned. This application Dec. 8, 1983, Ser. No. 559,463
Claims priority, application Japan, Dec. 18, 1978, 53-154966; Mar. 7, 1979, 54-25642
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—475.8 **2 Claims**



1. A cold drawn high-orientation multilayered O_2 barrier film, having a tensile strength of not less than 5.0 Kg/mm², the principal component layers of said film being highly oriented, said multilayer film comprising at least one layer preponderantly comprising a cold-drawable resin selected from the group consisting of blended and unblended specific polymers, [1] (B)+(A)+(C), [2] (B)+(A), [3] (B)+(C), [4] (D), and [5] (E), wherein
(A) is at least one ethylene type polymer selected from the group consisting of copolymers of ethylene with another monomer selected from the group consisting of unsaturated carboxylic acids and alkyl esters of said carboxylic acids, ionically crosslinked resins derived from said copolymers and low-density polymers of ethylene,
(B) is a soft copolymer elastomer having a Vicat softening point of not more than 60° C.,
(C) is at least one polymer selected from the group consisting of crystalline polypropylene, high-density polyethylene, crystalline polybutene-1 and polymethyl pentene-1,
(D) is a crystalline polybutene-1 having a concentration of 50 to 100% by weight, and
(E) is an ionically crosslinked resin,
said multilayered film consisting of
at least one cold drawable resin layer (CDR), at least on layer (Br) formed of a polymer possessing an O_2 barrier property and at least one layer (S) formed of at least one polymer selected from the group consisting of crystalline polypropylene, polyethylene, ethylene-vinyl acetate copolymer, ethylene-aliphatic unsaturated carboxylic acid copolymers and ethylene-aliphatic unsaturated carboxylate copolymers, and said film having a multilayer construction represented by the combination of
S/CDR/Br,
S/CDR/Br/CDR,
S/CDR/Br/CDR/S,
S/Br/CDR, or
S/CDR/Br/S.

4,469,754

HEAT SEAL COMPOSITION

George L. Hoh, and Donald A. Vassallo, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 185,728, Sep. 10, 1980. This application May 14, 1982, Ser. No. 378,396
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—476.3 **7 Claims**

1. A flexible packaging material comprising a substantially homogeneous blend of polymeric materials comprising:
(a) 20 to 80 percent, by weight, of a terpolymer having, as monomeric components,
(i) 65 to 95 percent, by weight, ethylene,
(ii) 4 to 30 percent, by weight, vinyl alkanoate or an ester selected from the group consisting of alkyl acrylate, and alkyl methacrylate alkanoic wherein the alkanoic acid moiety of the alkanoate and the alkyl group have one to four carbon atoms, and
(iii) 0.5 to 20 percent, by weight, ethylenically unsaturated monocarboxylic acid selected from the group consisting of acrylic acid and methacrylic acid; and
(b) 20 to 80 percent, by weight, of an ionomer having, as monomeric components,
(i) 75 to 99 percent, by weight, ethylene,
(ii) 1 to 25 percent, by weight, ethylenically unsaturated monocarboxylic acid selected from the group consisting of acrylic acid and methacrylic acid
wherein the sum of the weight percentages of comonomers ii and iii in the terpolymer is at least eight percentage points higher than the weight percentage of comonomer ii in the ionomer and wherein 5 to 40 percent of the carboxylic acid in the blend is neutralized by zinc or magnesium ions coated onto a substrate packaging material.

6. The packaging material of claim 1 wherein the substrate material is selected from the group consisting of polyethylene, polypropylene, polyesters, and polyamides.

4,469,755

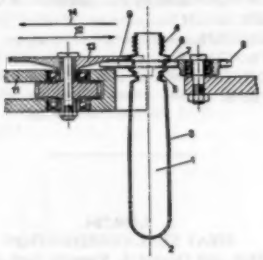
PREFORM MADE FROM A THERMOPLASTIC AND PROCESS FOR BLOW-MOULDING A HOLLOW ARTICLE FROM SUCH A PREFORM

José Branchadell, Wezembeek-Oppem, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Division of Ser. No. 350,098, Feb. 18, 1982,. This application Oct. 17, 1983, Ser. No. 542,751
Claims priority, application France, Feb. 23, 1981, 81 03708
Int. Cl.³ B65D *21/00*
U.S. Cl. 428—542.8 **15 Claims**

1. Preform, made from a thermoplastic, for the production of hollow articles by blow-moulding, comprising a body of cylin-

drical general shape surmounted by a profiled false neck, characterised in that the false neck possesses a circular toothed



collar located in a plane at rightangles to the longitudinal axis of the preform.

4,469,756

METHOD OF AND APPARATUS FOR FORMING AN OUTWARDLY PROJECTING BULGE IN A STEEL WIRE STRAND FOR FORMING AN ANCHOR IN CONCRETE

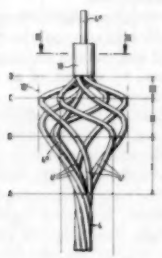
Dieter Jungwirth, Munich; Lorenz Schnitzler, Pöcking; Alto Mannhart, and Johann Wlodkowski, both of Munich, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,303

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1982, 3207957

Int. Cl.³ B23P *25/00*; B21C *37/00*

U.S. Cl. 428—592 **16 Claims**



1. A method of forming an outwardly projecting axially extending bulged section in an axially extending strand of steel wires made up of a plurality of individual wires so that the bulged section can be used to anchor the strand in a concrete structural member, comprising axially compressing a given length of the strand and deforming the individual wires as they move radially outwardly from the axis of the strand, wherein the improvement comprises providing an axially extending open-ended cylindrically shaped member forming an cylindrical limiting hollow space for defining the maximum diameter of the bulged section transverse to the axial direction of the strand, rotatably supporting the cylindrically shaped member, extending the strand through the hollow space with the axis of the strand centered within the hollow space, applying a compressive force to one end of the strand and rotatably supporting the strand at the end at which the compressive force is applied for deforming the individual wires of the strand outwardly into contact with the inside surface of the cylindrically shaped member limiting the hollow space, and continuing the application of the compressive force while the individual wires turn around the axis of the strand in contact with the inside surface of the cylindrically shaped member.

10. An anchoring bulged section for a strand of steel wires made up of a number of individual wires where an axial length of the strand is compressed to form the individual wires radially outwardly from the original state of the strand with the individual wires disposed in spaced relation to one another between a first location and a second location spaced apart in the axial direction of the strand, comprising that in the direction extending from the first location to the second location the individual wires are deformed radially outwardly from the axis of the strand in the original state to an axially extending region where the individual wires forming the bulged section have a maximum diameter outwardly from the strand axis and from the opposite end of said axial extending region from the first location the individual wires are inclined radially inwardly toward the axis of the strand until the individual wires resume their original position in the strand at the second location, and said individual wires have a greater angle relative to the axis of the strand from the end of the axially extending region adjacent to the second location to the second location than the individual wires extending from the first location to the end of the axially extending region closer to the first location.

4,469,757

STRUCTURAL METAL MATRIX COMPOSITE AND METHOD FOR MAKING SAME

Amit K. Ghosh; C. Howard Hamilton, both of Thousand Oaks, Calif., and Neil E. Paton, Allison Park, Pa., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 20, 1982, Ser. No. 380,187

Int. Cl.³ C22F *1/04*

U.S. Cl. 428—614 **4 Claims**

1. A method of producing a composite, comprising:

stacking foils of an aluminum alloy which has been processed to be superplastic and a reinforcement so that said reinforcement is sandwiched between said foils to form a stack;

heating said stack to a temperature in the range of 480° C. to 580° C.;

applying a pressure in the range of 200 psi to 500 psi to said stack, whereby said alloy flows superplastically around said reinforcement and diffusion bonds said foils into a composite without melting; and

releasing said pressure and cooling said stack.

4,469,758

MAGNETIC RECORDING MATERIALS

John J. Scott, Niagara Falls, Canada, assignor to Norton Co., Worcester, Mass.

Filed Apr. 4, 1983, Ser. No. 481,558

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—693 **4 Claims**

1. A magnetic recording medium including a backing and a magnetic coating and having finely divided aluminum titanite included in a surface coating on the medium, said aluminum titanate being present in an amount of from 0.1 to 6% of the weight of the coating solids.

4,469,759

MAGNETIC ELECTROLYTE DESTRATIFICATION

William J. Newill, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1982, Ser. No. 449,239

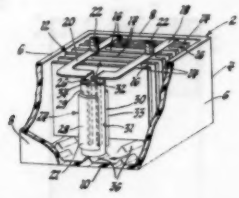
Int. Cl.³ H01M *2/00*, *2/38*

U.S. Cl. 429—10 **6 Claims**

1. An electric storage battery comprising: a container having bottom, end and side walls defining at least one cell compartment; a stack of closely spaced, alternately interspersed positive and negative polarity plates defining an electrochemically active cell element; a stratifiable electrolyte engulfing said element with said compartment; and a discrete magnetohydrodynamic pump immersed in said electrolyte outboard said

element and interjacent said element and a said wall, said pump comprising:

a conduit having wall means defining a passageway extending between an inlet opening at one end of said conduit, and an outlet opening at the other end of said conduit, said conduit serving to direct an upward flow of concentrated electrolyte around the outside of said element to above said element for downward percolation therethrough;



means adjacent said passageway for establishing a magnetic field transverse said passageway;

electrode means disposed within said passageway for passing current through said electrolyte transverse said field and said passageway and such as to move electrolyte through said conduit; and

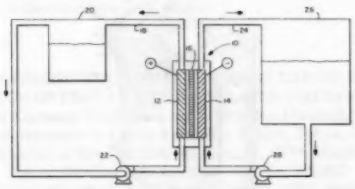
means defining an electric current path between said electrodes and a source of said current.

4,469,760

REDOX BATTERY INCLUDING A BROMINE POSITIVE ELECTRODE AND A CHROMIUM ION NEGATIVE ELECTRODE, AND METHOD

Jose D. Giner, Brookline, and Herbert H. Stark, Waltham, both of Mass., assignors to Electric Power Research, Institute, Palo Alto, Calif.

Filed Sep. 8, 1981, Ser. No. 300,576
Int. Cl.³ H01M *8/20*
U.S. Cl. 429—21 **6 Claims**



1. A redox flow battery comprising the combination of a redox reaction type of positive electrode half-cell compartment and a redox type of negative electrode half-cell compartment, with electrolyte fluid communication therebetween, said positive electrode and negative electrode half-cell compartments being separated from each other by an anionic permselective membrane, said positive half-cell compartment containing an aqueous electrolyte including bromide ion, bromine, and a complexing organic liquid for bromine, and said negative electrode half-cell compartment containing an aqueous solution of chromium ion capable of the following redox reaction:

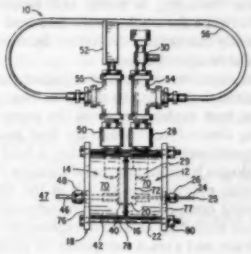
$$Cr^{2+} \underset{\text{charge}}{\overset{\text{discharge}}{\rightleftharpoons}} Cr^{3+} + e$$

4,469,761

RECHARGEABLE LITHIUM/SULFUR AMMONIATE BATTERY

John E. Bennett, Painesville; David E. Harney, and Thomas A. Mitchell, both of Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 210,739, Nov. 26, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 405,882
Int. Cl.³ H01M *10/44*
U.S. Cl. 429—50 **18 Claims**



1. A rechargeable electric storage cell comprising:

a housing, including an internal chamber;

a selectively permeable partition separating the chamber into two compartments and establishing a liquid seal between them, the partition being of a type that selectively permits passage of a desired charged cell chemical species therethrough;

a liquid anode comprising one of an alkali and alkaline earth metal dissolved in anhydrous ammonia contained within one of the internal compartments, the partition being in virtually continuous contact with the liquid anode;

a cathode positioned within the other internal compartment;

an anhydrous fluid at least partially filling the cathode compartment for conducting the charged chemical species between the partition and the cathode and containing in solution polysulfides of the same metal present in the liquid anode; and

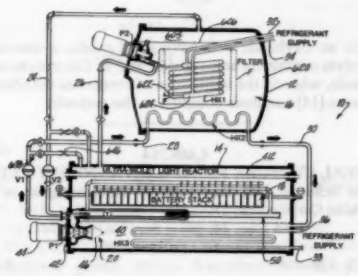
a pressure equalization means communicating between said internal compartments.

4,469,762

SELF-DRAINING HEAT EXCHANGER ARRANGEMENT AND METHOD

Bhim S. Singh, Sterling Heights, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Jul. 1, 1983, Ser. No. 510,255
Int. Cl.³ H01M *2/38*
U.S. Cl. 429—51 **8 Claims**



1. An improved metal halogen battery system comprising:

stack means for producing electrical energy including at least one cell wherein halogen gas is formed having a positive electrode and a negative electrode separated by an aqueous electrolyte containing metal and halogen, a sump for collecting the electrolyte, and an enclosed gas space above the sump;

hydrate forming means for reacting said halogen gas from the cell with water to form halogen hydrate;

store means for storing the halogen hydrate as part of an aqueous material having a heat exchanger for decomposing the halogen hydrate;

pump means, including a pump and electrolyte conduit running between the stacks means and heat exchanger for intermittently circulating electrolyte from the stack means through the heat exchanger,

the heat exchanger being positioned higher than the electrolyte collected in the sump to allow the electrolyte to drain out of the heat exchanger when the pump means is not circulating electrolyte through the heat exchanger.

8. An improved method for operating a heat exchanger to decompose halogen hydrate in a metal halogen battery system so as to minimize precipitation of salt in the heat exchanger, said system being comprised of a store subsystem for storing halogen hydrate including said heat exchanger to decompose hydrogen hydrate, and a stack subsystem for producing electrical energy including a sump for collecting electrolyte and at least one cell provided with a positive electrode and a negative electrode separated by an aqueous electrolyte containing metal and halogen and at least one conductivity-improving salt, said method comprising the steps of:

circulating the electrolyte from the sump through the heat exchanger and back to the sump when halogen hydrate is to be decomposed; and

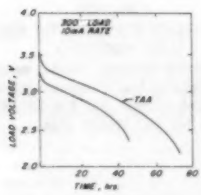
draining the electrolyte from the heat exchanger when the circulation of the electrolyte through the heat exchanger is stopped.

4,469,763

LITHIUM OXYHALIDE BATTERY WITH CATHODE CATALYST

Fraser Walsh, Arlington, and R. Scott Morris, Fairhaven, both of Mass., assignors to Tracer Technologies, Inc., Newton, Mass.

Filed Oct. 21, 1983, Ser. No. 544,244
Int. Cl.³ H01M 6/16
U.S. Cl. 429—101 **15 Claims**



1. In an oxyhalide cell having an anode, a non-aqueous electrolyte containing an oxyhalide and an electrolyte salt, and a cathode, wherein the improvement comprises the addition of a tetraaza-[14]-annulene complex to the cathode.

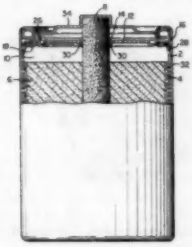
4,469,764

SEAL CLOSURE FOR A GALVANIC DRY CELL

Brooke Schumm, Jr., Bay Village, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 14, 1982, Ser. No. 449,574
Int. Cl.³ H01M 2/00
U.S. Cl. 429—86 **8 Claims**

1. A galvanic cell comprising in combination a container having an open end, a closed end and an upstanding wall terminating with an upper rim which defines the open end; an electrode comprising a depolarizer mix disposed within said container and separated from the upstanding wall by a separator; a current collector centrally embedded in said depolarizer mix and extending above the upper rim of said container; a closure covering the open end of said container, said closure comprising a cover having a top surface, a bottom surface, a



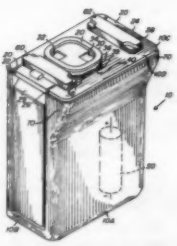
downwardly depending peripheral flange and an aperture defined at its center through which the upper portion of the current collector passes and is secured within said aperture; a sealant disposed on the bottom surface of said cover adjacent to and retained by said depending peripheral flange and wherein the upper rim of the container is embedded into the sealant thereby providing a sealed cell.

4,469,765

SHOCK ABSORBING BATTERY HOUSING

William J. McCartney, Sunrise; Jerome D. Jacobs, Ft. Lauderdale, and Mitchel J. Keil, Margate, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1983, Ser. No. 472,355
Int. Cl.³ H01M 2/10
U.S. Cl. 429—123 **17 Claims**



1. A portable battery device for coupling to an electrically energizable apparatus comprising:

housing means of resilient material for containing at least one electrical energy cell therein;

interconnecting means of rigid material, situated substantially within and extending without said housing means, for mechanically connecting said housing means to said electrically energizable apparatus, and

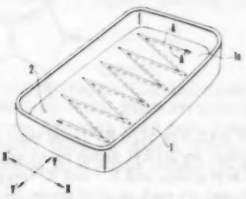
electrical contact means, operatively coupled to said at least one electrical energy cell and being situated on said interconnecting means, for providing electrical coupling of said at least one energy cell to said electrically energizable apparatus,

whereby said portable battery device absorbs shock in a non-destructive manner when subjected to impact.

4,469,766
METHOD OF FORMING CATHODE-RAY TUBE PHOSPHOR SCREEN

Masahiro Nishizawa; Kiyoshi Miura; Hiroshi Yokomizo; Osamu Sasaya, and Yoshifumi Tomita, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,627
Claims priority, application Japan, Nov. 25, 1981, 56-187881
Int. Cl.³ G03C 5/00
U.S. Cl. 430—23 2 Claims



1. A method of forming a cathode-ray tube phosphor screen by causing a fluorescent material to adhere to a particle-accepting photo-sticky surface formed uniformly on the inner surface of a face plate comprising the steps of:

applying a photosensitive composition which becomes sticky through exposure to ultraviolet light, to an inside surface of a faceplate of the color picture tube as a thin layer;

exposing the thin layer to ultraviolet light patternwise through a shadow mask, thereby making the exposed parts sticky;

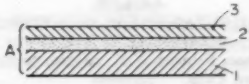
placing phosphor particles on the inner surface of the face plate; and tilting said face plate simultaneously in orthogonal directions alternately to cause the phosphor particles to slide in a zig-zag fashion from one corner of said faceplate to the diagonally opposite corner and back to said one corner,

thereby causing the phosphor particles to slide physically over the particle-capturing sticky surface so as to cause the phosphor particles to be stuck patternwise to the particle-retaining sticky surface.

4,469,767
ELECTROPHOTOGRAPHIC PROCESS CAPABLE OF IMAGE OVERPLAY AND APPARATUS THEREFOR

Takashi Kitamura, Yokohama, and Michio Ito, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 104,706, Dec. 17, 1979, abandoned.
This application Jan. 15, 1982, Ser. No. 339,602
Claims priority, application Japan, Dec. 26, 1978, 53-161401; Dec. 26, 1978, 53-161403; Dec. 26, 1978, 53-161405; Dec. 26, 1978, 53-161407
Int. Cl.³ G03G 13/052, 13/24
U.S. Cl. 430—31 12 Claims



1. A process for forming an overlay latent image, comprising the steps of:

(a) charging, with a predetermined polarity, the surface of an insulating layer of a photosensitive member essentially composed of a conductive substrate, a photoconductive layer having a property of rejecting the injection thereinto of charge of a polarity opposite to the predetermined polarity in the dark, and said insulating layer;

(b) providing said photosensitive member with a first image-forming irradiation actinic to said photoconductive layer substantially simultaneous with or subsequent to said charging, so that the charge of said opposite polarity is substantially injected into the photoconductive layer at a light area of the first image, but the charge is not injected at a dark area of the first image;

(c) providing the surface of the insulating layer of said photosensitive member, after said irradiation, with a corona discharge having a component of corona ions opposite in polarity to the polarity of charging applied on the insulating surface during said charging step, and further providing a second image-forming irradiation actinic to said photoconductive layer substantially simultaneous with said corona discharge, wherein said first and second images are different; and

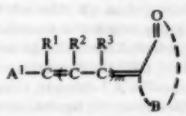
(d) providing the entire surface of said photosensitive member with a uniform irradiation actinic to said photoconductive layer of said member, thereby forming an overlay latent image of said first and second images on the surface of said insulating layer.

4,469,768
ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL COMPRISING A CHARGE-GENERATING MATERIAL AND A CHARGE-TRANSPORTING MATERIAL

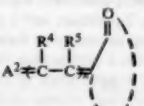
Seiji Horie, Saitama; Masayoshi Nagata, Kanagawa; Junji Nakano, and Hideo Sato, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1982, Ser. No. 388,369
Claims priority, application Japan, Jun. 12, 1981, 56-90437
Int. Cl.³ G03G 5/06
U.S. Cl. 430—58 14 Claims

1. An electrophotographic light-sensitive material with an electrophotographic light-sensitive layer containing a charge-generating material and a charge-transporting material wherein the charge-generating material is a compound represented by the general formula (I) or (II):



(I)



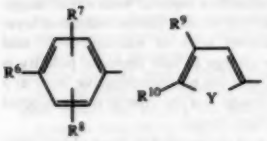
(II)

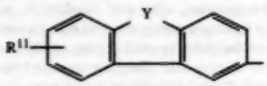
wherein

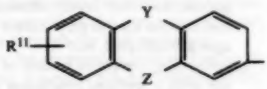
(i) m is 0 or 1, and n is 0, 1 or 2;

(ii) R^1, R^2, R^3, R^4 and R^5 may be the same or different, and are each a hydrogen atom, an alkyl group, an aralkyl group, an aryl group or a heterocyclic group;

(iii) A^1 is a univalent group which is derived from one of the substituted phenyl group, 5-membered monocyclic or condensed heterocyclic, and 6-membered condensed heterocyclic rings represented by the following formula:





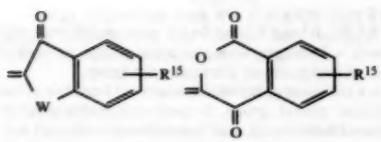


(wherein R^6 is an alkoxy group, an aralkyloxy group or a substituted amino group represented by the formula:

(wherein R^{12} and R^{13} may be the same or different, and are each a substituted or unsubstituted alkyl group or a substituted or unsubstituted phenyl group, or groups capable of combining together to form a heterocyclic ring containing a nitrogen atom); R^7 and R^8 may be the same or different, and are each a hydrogen atom, a halogen atom, an alkyl group or a lower alkoxy group; Y and Z may be the same or different, and are each S, O or N-R^{14} (wherein R^{14} is an alkyl group containing from 1 to 4 carbon atoms); R^9 and R^{10} may be the same or different, and are each a hydrogen atom, an alkyl group or an alkoxy group, or they are groups capable of combining together to form a benzene or naphthalene ring; and R^{11} is a hydrogen atom, an alkyl group, an alkoxy group, an aryloxy group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a halogen atom, a monoalkylamino group, a dialkylamino group, an amido group or a nitro group, which may be either substituted or not substituted);

(iv) A^2 is a divalent group which is derived from a heterocyclic ring nucleus selected from the group consisting of imidazole, 3H-indole, thiazole, benzothiazole, naphthothiazole, thianaphtheno-7',6',4,5-thiazole, oxazole, benzoxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine, and 4-pyridine; and

(v) B is an atom group necessary to form a divalent group which is derived from a carbon ring or heterocyclic ring containing the oxo oxygen atom of the carbonyl group linked to one of the rings represented by the following formulae:



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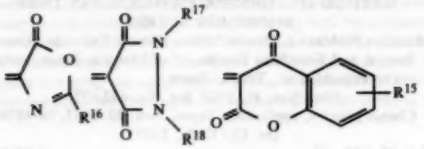
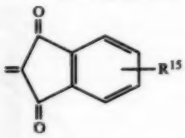




(wherein W is O, S or SO_2; R^{15} is the same as R^{11}; R^{16} is an alkyl group, an aralkyl group or an unsubstituted or substituted aryl group; and R^{17} and R^{18} may be the same or different, and are each an alkyl group, an arlkyl group; or an unsubstituted or substituted phenyl group).

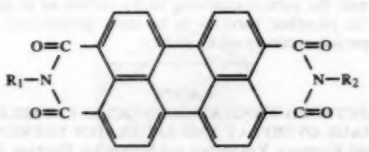
4,469,769

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY CONTAINS HALO-BENZOQUINONE SENSITIZER

Toru Nakazawa, Kumatori; Akira Fushida, Suita, and Yasushi Kamezaki, Sakai, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,233
Claims priority, application Japan, Aug. 3, 1982, 57-135478
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—78 **5 Claims**

1. A photosensitive material for the electrophotography, which comprises a dispersion of a charge-generating pigment in a charge-transporting medium composed mainly of a polyvinyl carbazole resin, wherein a perylene pigment represented by the following general formula:



wherein R_1 and R_2 stand for a hydrogen atom or a substituted or unsubstituted alkyl or aryl group, is dispersed and incorporated as the charge-generating pigment in an amount of 1 to 40 parts by weight per 100 parts by weight of the polyvinyl carbazole resin and a halogeno-p-benzoquinone is further incorporated in an amount of 1 to 60 parts by weight per 100 parts by weight of the polyvinyl carbazole resin.

4,469,770

STYRENE BUTADIENE PLASTICIZER TONER COMPOSITION BLENDS

Robert A. Nelson, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1982, Ser. No. 453,253
Int. Cl.³ G03G *9/08, 9/10*
U.S. Cl. 430—110 **29 Claims**

1. An improved positively charged toner composition consisting essentially of (1) a styrene butadiene copolymer plasticizer blend, wherein during emulsion polymerization the plasticizer prior to acid coagulation functions as a surfactant, and hydrophobic portion of the surfactant being incorporated into

the toner resin and the hydrophilic portion of the surfactant extending away from said toner particles, containing from about 92 percent by weight to about 97 percent by weight of styrene butadiene copolymer, and from about 3 percent by weight to about 8 percent by weight of plasticizer, the styrene butadiene copolymer having a weight average molecular weight of from about 45,000 to about 155,000, and a number average molecular weight of from about 7,000 to about 25,000, the copolymer containing from about 85 percent by weight of styrene to about 93 percent by weight of styrene, and from about 7 percent by weight of butadiene to about 15 percent by weight of butadiene, (2) pigment particles, and (3) a charge enhancing additive.

4,469,771

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MEMBER WITH THIN OVERLAYER

Haruo Hasegawa, Kawasaki; Kenji Seki, Yokohama; Hideaki Ema, Kawasaki; Masahide Harada, Tokyo, and Shiro Yamane, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 130,275, Mar. 14, 1980, abandoned, which is a division of Ser. No. 877,369, Feb. 13, 1978, Pat. No. 4,225,648, which is a continuation of Ser. No. 737,847, Nov. 11, 1976, abandoned. This application Mar. 25, 1982, Ser. No. 362,176

Claims priority, application Japan, Nov. 11, 1975, 50-134695

Int. Cl.³ G03G 5/14, 13/22

U.S. Cl. 430—126 **1 Claim**

1. An electrophotographic process, which comprises the steps of:

charging the surface of an electrophotographic light-sensitive plate by applying corona discharge thereto, said electrophotographic light-sensitive plate comprising an electroconductive support, a photoconductive layer overlying said support and an outermost protective coating layer overcoating said photoconductive layer, said outermost protective coating layer having a thickness of from 0.5 to 15 microns, being thinner than said photoconductive layer and consisting essentially of nonphotoconductive, film-forming, organic polymer selected from the group consisting of polyamide, polyester, polyurethane, polystyrene, poly-n-butylmethacrylate, polycarbonate, polyvinylformal, polyvinylacetal, polyvinylbutyral, ethyl cellulose, nitro cellulose, cellulose propionate and acetyl cellulose, said polymer containing from 0.1 to 20 percent by weight of Lewis acid mixed therein, said outermost protective coating layer being effective to protect said photoconductive layer from abrasion and to provide high resolution when an electrostatic latent image thereon is developed;

then imagewise exposing said electrophotographic light-sensitive plate to form an electrostatic latent image;

then developing said electrostatic latent image by applying toner thereto;

and then transferring said developed image to another substrate and fixing the developed image on said another substrate.

4,469,772

WATER DEVELOPABLE DYE COATING ON SUBSTRATE WITH TWO DIAZO POLYCONDENSATION PRODUCTS AND WATER SOLUBLE POLYMERIC BINDER

Oliver A. Barton, Florham Park, and James D. Wright, Basking Ridge, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 384,457, Jun. 3, 1983, abandoned. This application Jan. 17, 1983, Ser. No. 458,408

Int. Cl.³ G03C 1/54, 1/60; G03F 3/00

U.S. Cl. 430—163 **13 Claims**

1. A photographic element comprised of a substrate and a photosensitive coating on said substrate, said coating comprising

(A) the polycondensation product of 3-methoxy-4-diazodiphenyl amine sulfate and 4,4'-bis-methoxy methyl-diphenyl ether, precipitated as methane sulfonate; and,

(B) the polycondensation product of 3-methoxy-4-diazodiphenyl amine sulfate and 4,4'-bis-methoxy methyl-diphenyl ether, precipitated as mesitylene sulfonate, and

(C) at least one colorant: and

(D) at least one water soluble polymeric binding resin; and wherein

the ratio of component A to component B is in the range of from about 1:3.5 to 3.5:1; and the amount of total diazo in the coating is in the range of from about 6% to about 60% by weight; and the amount of colorant is in the range of from about 3% to about 60% by weight; and the amount of resin is in the range of from about 33% to about 87% by weight; and wherein the photosensitive coating, after light exposure, is capable of being developed with water alone or with light rubbing.

4,469,773

CARBAMOYLOXY SUBSTITUTED COUPLERS IN A PHOTOTHERMOGRAPHIC ELEMENT AND PROCESS

Anthony Adin; Csaba A. Kovacs, and Delwyn E. Machiele, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,754

Int. Cl.³ G03C 1/02

U.S. Cl. 430—222 **34 Claims**

1. In a photothermographic element comprising a support bearing, in reactive association, in binder, photographic silver halide, a silver halide developing agent and a coupler that is capable of oxidative coupling with the oxidized form of said developing agent, the improvement wherein:

said coupler (a) comprises, in the coupling position, a carbamoyloxy group, and (b) upon oxidative coupling with the oxidized form of said developing agent, releases a carbamic acid fragment that, in turn, is capable of thermally releasing ammonia or an amine; and

said photothermographic element comprises at least one image-forming material which generates a dye image in response to the presence of ammonia or an amine from the carbamic acid fragment.

4,469,774

POSITIVE-WORKING PHOTOSENSITIVE BENZOIN ESTERS

Ross A. Lee, Webster, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

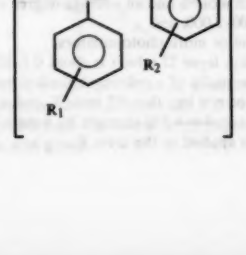
Filed Mar. 28, 1983, Ser. No. 479,493

Int. Cl.³ G03C 1/78

U.S. Cl. 430—270 **17 Claims**

1. A photosensitive positive-working polymer consisting essentially of repeating units A, B and C wherein

A is



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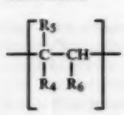
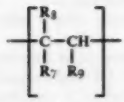
B is



C is



in the proportion mA, nB and pC

wherein

m, n and p are the average integral frequencies of their respective monomeric constituents and have values in the range of 1 to 800, 0 to 800 and 0 to 800, respectively, with the proviso that the total of m, n and p ranges from 2 to 1600;

R_1 is 3'-methoxy, 3',4'-dimethoxy or 3',5'-dimethoxy;

R_2 is 3-methoxy, 3,4-dimethoxy, 3,4-benzo or hydrogen;

R_3 is hydrogen or methyl;

R_4 is COOH, SO_3H, omega carboxyalkyl of 1 to 4 carbon atoms or carboethoxy monophthalate, β-sulfocarboethoxy;

R_5 is hydrogen or methyl;

R_6 is hydrogen, methyl or COOH;

R_7 is —CN, —$COOR_{10}$ where R_{10} is alkyl of 1 to 10 carbon atoms, β-hydroxy alkyl where alkyl is of 1 to 4 carbon atoms;

R_8 is hydrogen or methyl;

R_9 is hydrogen or methyl.

4,469,775

MULTI-LAYER ELEMENTS WITH POLYVINYL ALCOHOL OVERCOAT SUITABLE FOR THE PRODUCTION OF RELIEF PRINTING PLATES

John Lynch, Monsheim; Rudolf Vyvial, Ludwigshafen; Manfred Zuerger, Sinsheim, and Klaus Borbo, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 398,821

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128950

Int. Cl.³ G03C *1/68, 1/74*

U.S. Cl. 430—273 **18 Claims**

1. A process for improving the production, drying and shelf life of a multi-layer element which is suitable for the production of a relief printing plate and comprises

(a) a dimensionally stable base B and

(b) a photosensitive layer R which has a bulk density of from 100 to 70,000 mg/dm² and contains a mixture which is soluble or dispersible in an aqueous solvent and comprises

(b1) a 2-hydroxyalkyl acrylate and/or methacrylate where alkyl is of 2 or 3 carbon atoms, with or without one or more further photopolymerizable, ethylenically unsaturated monomers,

(b2) one or more polyvinyl alcohols which are soluble or dispersible in water and have a degree of hydrolysis of 74–88 mole% and an average degree of polymerization of 200–2,000, and

(b3) one or more photoinitiators,

wherein a top layer D which is about 0.1–10 μm thick when dry and essentially of a polyvinyl alcohol having a degree of hydrolysis of not less than 95 mole% and a viscosity of 2–8 mPa.s (measured as a 4% strength by weight aqueous solution at 20° C.) is applied to the layer R.

4,469,776

DEVELOPING SOLUTION FOR LIGHT-SENSITIVE PRINTING PLATES

Hiroshi Matsumoto, and Nobuyuki Kita, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 29, 1983, Ser. No. 489,906

Claims priority, application Japan, Apr. 30, 1982, 57-72913

Int. Cl.³ G03F *7/08*; G03C *5/24*

U.S. Cl. 430—309 **4 Claims**

1. A method of developing an imagewise exposed light-sensitive presensitized printing plate having a light-sensitive layer comprising an o-quinonediazide compound, which comprises developing the plate with an aqueous potassium silicate solution containing a chelating agent selected from the group consisting of amino polycarboxylate acids, organic phosphonic acids and phosphonotricarboxylic acids, said potassium silicate having a molar ratio of SiO_2/K_2O of 1.0 to 2.0 and being present in the developing solution in an amount within the range of 2 to 10 wt.%.

4,469,777

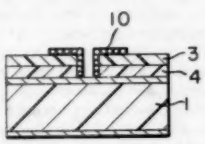
SINGLE EXPOSURE PROCESS FOR PREPARING PRINTED CIRCUITS

James W. O'Neil, Howell, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 1, 1983, Ser. No. 556,877

Int. Cl.³ B05D *5/12*; H05K *3/00*; B44C *1/22*; C03C *15/00*

U.S. Cl. 430—315 **11 Claims**



1. A process for preparing a two layer printed circuit board having conductive interconnections which comprises:

(a) applying to a substrate bearing an electrically conductive circuit or circuit pattern at least one layer of a photoadhesive composition;

(b) exposing the layer or layers to actinic radiation through a circuit image consisting essentially of areas of three different optical densities (1) optical density about 0.0 which transmits substantially all the actinic radiation; (2) optical density at least about 2.5 which transmits substantially no actinic radiation; and (3) optical density intermediate between values of (1) and (2) which transmits partial actinic radiation:

(c) removing the areas corresponding to image areas (2) in step (b) with a solvent for the photoadhesive composition to form vias with sidewalls, image areas (1) and (3) of step (b) being nonremovable with said solvent;

(d) optionally tackifying image areas corresponding to (3) of step (b);

(e) applying finely divided metal, alloy or plating catalyst to adherent image areas corresponding to (3) in step (b) and sidwalls formed in step (c);

(f) optionally removing excess toner from image areas corresponding to (1) of step (b);

(g) optionally curing the circuit board by heating the board at a temperature up to at least 100° C.; and/or exposing the circuit board to ultraviolet radiation; and

(h) plating the metallized or catalyzed image to form an electrically conductive circuit pattern interconnected with the underlying circuit pattern or circuit.

4,469,778

PATTERN FORMATION METHOD UTILIZING DEEP UV RADIATION AND BISAZIDE COMPOSITION

Takao Iwayanagi, Tokyo; Takahiro Kohashi, Hachioji; Saburo Nonogaki, Tokyo, and Yoshio Hatano, Urawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

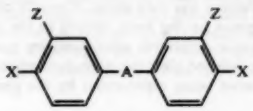
Division of Ser. No. 279,551, Jul. 1, 1981, abandoned, which is a continuation of Ser. No. 096,463, Nov. 21, 1979, abandoned. This application Apr. 14, 1983, Ser. No. 484,847

Claims priority, application Japan, Dec. 1, 1978, 53-147872; Sep. 7, 1979, 54-114185

Int. Cl.³ G03C 5/16; G03F 7/26

U.S. Cl. 430—325 24 Claims

1. A pattern formation method comprising the first step of forming a film of a photosensitive composition comprising a bisazide compound, the bisazide compound being an organic solvent soluble compound, represented by the following general formula:



wherein A stands for an atom or atomic group selected from O, S, CH_2CH_2, SO_2 and S_2, X stands for an atom or atomic group selected from H and N_3, and when X is H, Z is a group of N_3 and when X is N_3, Z is an atom of H or C, and a polymeric compound, crosslinkable with a photochemical reaction product of said bisazide compound on a substrate, said polymeric compound being an organic solvent soluble polymeric compound, the amount of the bisazide compound used being sufficient for the photochemical reaction product thereof to crosslink the polymeric compound, the second step of exposing said film only to deep UV rays, of a wavelength of 200 to 320 nm, having a predetermined pattern and the third step of removing the unexposed area from said film by development using a solvent for the unexposed photosensitive composition.

4,469,779

INFRARED COLOR PHOTOGRAPHIC FILM

Gwynn H. Suits, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Mar. 16, 1983, Ser. No. 475,773

Int. Cl.³ G03C 7/00, 1/46

U.S. Cl. 430—363 7 Claims

1. Infrared color photographic film comprising:

a transparent base;

first and second layers adjacent the base, one of which is dye sensitized to the infrared band, the other of which is dye sensitized to the visible red band;

a third layer including means for filtering out light in the visible blue band from impinging the first and second layers during exposure of the film; and

an outer layer dye sensitized to the visible green band.

4,469,780

COLOR IMAGE FORMING PROCESS

Hiroyuki Hirai; Koichi Nakamura, and Haruhiko Iwano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1983, Ser. No. 461,430

Claims priority, application Japan, Jan. 27, 1982, 57-11176; Feb. 10, 1982, 57-20046; Feb. 16, 1982, 57-23140

Int. Cl.³ G03C 7/40, 5/24, 5/40, 11/00

U.S. Cl. 430—373 17 Claims

1. A process for forming a color image, comprising the steps of:

providing a light-sensitive silver halide color photographic material;

imagewise exposing the material in order to form a latent image;

subjecting the material to color development and intensification processing in order to develop the latent image and form a developed and intensified image, the color development and intensification processing being carried out in a combined developing and intensifying bath containing a compound selected from the group consisting of hydrogen peroxide and a compound capable of releasing hydrogen peroxide and a developing agent, said combined bath not containing substantially any bromide ion or any iodide ion, the combined bath further comprising at least one nitrogen-containing heterocyclic compound; and

treating the material with a non-bleach, non-fix, dilute buffer solution containing a buffer agent and having a pH adjusted within the range of 2 to 7.

4,469,781

PROCESSING FOR SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Takatoshi Ishikawa, and Takashi Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

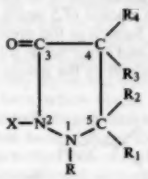
Filed Nov. 1, 1982, Ser. No. 438,185

Claims priority, application Japan, Oct. 30, 1981, 56-173950

Int. Cl.³ G03C 7/00

U.S. Cl. 430—393 6 Claims

1. In a method of developing, bleaching and fixing silver halide color photographic materials, the improved method which comprises using a bleach solution or a blix solution containing benzyl alcohol in an amount of 3.0 to 30 ml/l and at least one compound represented by the following general formula (I):



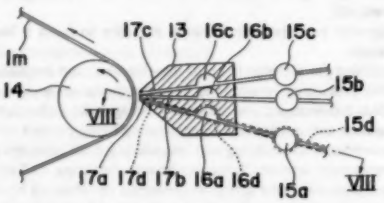
wherein X represents a hydrogen atom or an acetyl group; R represents an aryl group; and R_1, R_2, R_3 and R_4, which may be the same or different, each represents a hydrogen atoms, an alkyl group or an aryl group.

4,469,782

COATING METHOD FOR HAVING SIMULTANEOUS SEPARATE EXTRUDABLE MULTIPLE COATINGS WITH LATERALLY SPACED SEPARATORS

Mamoru Ishiwata, Larchmont, N.Y., and Minoru Minoda, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 191,623, Sep. 29, 1980, Pat. No. 4,358,523.
This application Jul. 19, 1982, Ser. No. 399,929
Claims priority, application Japan, Sep. 27, 1979, 54-124935
Int. Cl.³ B05C 5/02
U.S. Cl. 430—502 2 Claims



1. In a coating method for use in the production of a photographic film by flowing liquid through a slot of a liquid supply hopper from a liquid containing reservoir upstream of said slot onto a moving web or the like, the improvement comprising the steps of:

causing separate extrudable multiple coating liquids to flow laterally in side-by-side fashion within said slot, separated from each other by laterally spaced separators just upstream of said opening, and

effecting liquid-to-liquid contact with each other in the lateral width direction of the coating prior to or at their extrusion from the slot opening and onto said web, such that said multiple coating liquid layer is composed of multiple single compounds in laterally side-by-side liquid-to-liquid contact throughout the complete width of said extrusion slot with the thicknesses of the multiple coating liquids of said layer controlled by the respective feed rates of the multiple coating liquids and with the lateral widths of the multiple coating liquids for said layer being regulated by the respective lateral spacings of said separators.

4,469,783

SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Kenichi Kuwabara; Satoshi Kubota, and Hiroyuki Mifune, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 3, 1983, Ser. No. 500,707
Claims priority, application Japan, Jun. 4, 1982, 57-95796
Int. Cl.³ G03C 1/02, 1/06
U.S. Cl. 430—567 4 Claims

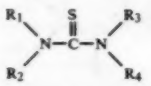
1. Silver halide photographic emulsion having silver halide grains, comprising:

(a) silver chloride in an amount of 60 mol% or more;

(b) silver bromide in an amount of 40 mol% or less; and

(c) silver iodide in an amount of 5 mol% or less,

wherein the grains are formed in the presence of (i) a silver halide solvent, wherein said silver halide solvent is a tetra-substituted thiourea represented by the general formula:



wherein R_1, R_2, R_3 and R_4 independently represent a substituted or unsubstituted alkyl group, an alkenyl group, or a substituted or unsubstituted aryl group, or wherein said R_1 and said R_2 or said R_2 and said R_3 or said R_3 and said R_4 combine together to form a 5- or 6-membered heterocyclic ring, and (ii) from 10^{-8} to 10^{-5} mole of a water-soluble iridium compound per mole of silver halide.

4,469,784

SILVER HALIDE EMULSIONS

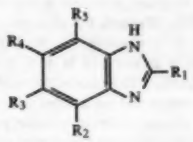
Tatsuo Heki, and Hiroyuki Mifune, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 24, 1982, Ser. No. 423,331
Claims priority, application Japan, Sep. 28, 1981, 56-153293
Int. Cl.³ G03C 1/02
U.S. Cl. 430—567 13 Claims

1. A silver halide emulsion, comprising:

a binder; and

regular silver halide grains having a cubic, octahedral or tetradecahedral crystal habit dispersed in the binder, said silver halide being pure silver bromide or silver iodobromide containing less than about 10 mol% of silver iodide and the grains having been formed in the presence of a benzimidazole derivative compound by grain formation and water washed after the grain formation, said imidazole derivative being represented by the general formula (I):



(I)

wherein R_1 represents a hydrogen atom, a halogen atom, an alkyl group which may be substituted by a hydroxy group, a cyano group, an alkoxy group, an unsubstituted, mono-substituted or disubstituted amino group, a morpholino group, a free or esterified carboxyl group, a free or esterified sulfo group, or an aryl group, an alkenyl group, an aryl group, or a heterocyclic residue and R_2 to R_5, which may be the same or different, each represents a hydrogen atom, a halogen atom, a hydroxy group, an amino group, a nitro group, a cyano group, a carboxy group or a salt thereof, a sulfo group or a salt thereof, an alkyl group, an alkenyl group, an aryl group, or a group shown by R_6—D— wherein R_6 represents a hydrogen atom, an alkyl group or an aryl group and D represents —SO_2—, —COO—, —OCO—, —CONH—, —NHCO—, SO_2NH— or —$NHSO_2$—.

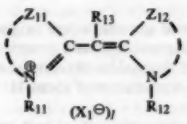
4,469,785

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeo Tanaka; Kaoru Onodera, both of Odawara, and Noboru Fujimori, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

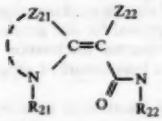
Filed Dec. 10, 1982, Ser. No. 448,787
Claims priority, application Japan, Dec. 19, 1981, 56-205521; Dec. 21, 1981, 56-207592; Dec. 21, 1981, 56-207593
Int. Cl.³ G03C 1/02
U.S. Cl. 430—572 17 Claims

1. A light-sensitive silver halide color photographic material comprising at least one layer having a negative working silver halide on a support, said negative working silver haiide comprising at least 80 mole % of silver chloride and being spectrally sensitized with a first sensitizing dye having a local maximum value of spectral sensitivity in the wavelength region of from 445 nm to 490 nm, said first sensitizing dye being at least one sensitizing dye of formula (III) or (IV):



Formula [III]

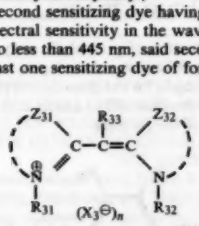
wherein Z_{11} and Z_{12} are each the atoms necessary for the formation of a group selected from the group consisting of a benzoxazole nucleus, a naphthoxazole nucleus, a benzothiazole nucleus, a napthothiazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus, a benzimidazole nucleus, a naphthoimidazole nucleus, a pyridine nucleus and a quinoline nucleus, said groups may be subsituted with a substituent selected from the group consisting of halogen, hydroxy, cyano, aryl, alkyl, alkoxy, and alkoxycarbonyl; R_{11} and R_{12} are each selected from the group consisting of an alkyl group, a substituted alkyl group wherein the substituents are selected from the group consisting of a carboxy group and a sulfo group; an alkenyl group and an aryl group; R_{13} is selected from the group consisting of a hydrogen atom, a methyl group and an ethyl group; $X_1\ominus$ is an anion; and l is 0 or 1,



Formula [IV]

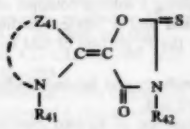
wherein Z_{21} represents the atoms necessary for the formation of a group selected from the group consisting of a benzoxazole nucleus, a naphthoxazole nucleus, a benzothiazole nucleus, a naphthothiazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus, a benzimidazole nucleus and a naphthoimidazole nucleus, said groups may be substituted with a substituent selected from the group consisting of halogen, hydroxy, cyano, aryl, alkyl, alkoxy, and alkoxycarbonyl; Z_{22} represents the atoms necessary for formation of a group selected from the group consisting of a rhodanine nucleus, a 2-thiodantoin nucleus which may be substituted at the 1-position with a substituent selected from the group consisting of alkyl, hydroxyalkyl and alkoxycarbonyl, and a 2-thioselenazolidine-2,4-dione nucleus; R_{21} and R_{22} are each selected from the group consisting of an alkyl group, an alkenyl group and an aryl group, said groups for R_{21} and R_{22} may be substituted with a substituent selected from the group consisting of alkyl, aryl, sulfoalkyl, carboxyalkyl, aralkyl, alkoxyalkyl, and alkoxycarbonylalkyl;

and a second sensitizing dye having a local maximum value of spectral sensitivity in the wavelength region from 420 nm to less than 445 nm, said second sensitizing dye being at least one sensitizing dye of formula (V) or (VI):



Formula [V]

wherein Z_{31} and Z_{32} are each the atoms necessary for formation of a cyanine heterocyclic nucleus selected from the group consisting of Group A and Group B wherein Z_{31} and Z_{32} may both be selected from Group A, and wherein Z_{31} and Z_{32} cannot both be selected from Group B; said cyanine heterocyclic nucleus of Group A being selected from the group consisting of an imidazole nucleus, an oxazole nucleus, a thiazole nucleus, a selenazole nucleus, and an indole nucleus; and said cyanine heterocyclic nucleus of Group B being selected from the group consisting of a benzimidazole nucleus, a naphthoimidazole nucleus, a benzoxazole nucleus, a naphthoxazole nucleus, a benzothiazole nucleus, a naphthothiazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus, a pyridine nucleus, and a quinoline nucleus, said groups of Group A and Group B may be substituted with a substituent selected from the group consisting of halogen, hydroxy, cyano, aryl, alkyl, alkoxy, and alkoxycarbonyl; R_{31} and R_{32} are each selected from the group consisting of an alkyl group, an alkenyl group and an aryl group, said alkyl group may be substituted with a substituent selected from the group consisting of carboxy and sulfo; R_{33} is selected from the group consisting of a hydrogen atom, methyl group and an ethyl group; $X_3\ominus$ is an anion; and n is 0 or 1:



Formula [VI]

wherein Z_{41} is the atoms necessary for formation of a group selected from the group consisting of a benzothiazole nucleus, a naphthothiazole nucleus, a benzoselenazole nucleus and a naphthoselenazole nucleus, said groups may be substituted with a substituent selected from the group consisting of halogen, hydroxy, cyano, aryl, alkyl, alkoxy and alkoxycarbonyl; R_{41} and R_{42} are each selected from the group consisting of an alkyl group, an alkenyl group an aryl group, said groups for R_{41} and R_{42} may be substituted with a substituent selected from the group consisting of alkyl, aryl, sulfoalkyl, carboxyalkyl, aralkyl, alkoxyalkyl, and alkoxycarbonylalkyl;

provided that when said first sensitizing dye is selected from compounds of formula (III) said second sensitizing dye is selected from compounds of formula (VI).

4,469,786

DETECTION OF CHEMICAL MUTAGENS IN MARKER RESCUE ASSAY

Anthony J. Garro, Tenafly, N.J., and Robert A. Phillips, New York, N.Y., assignors to The Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Filed Jan. 30, 1981, Ser. No. 230,037

Int. Cl.³ C12Q *1/70, 1/68, 1/02*; C12N *15/00*

U.S. Cl. 435—5 **5 Claims**

1. A method for assaying, a substance for potential mutagenicity, which method comprises:

(1) isolating DNA containing the wild-type genome of a temperate bacteriophage to obtain an isolated bacteriophage DNA and thereafter transfecting said DNA into competent cells, wherein

(a) said cells have been infected with conditional lethal mutant of the temperate bacteriophage which will infect said cells, the conditional lethal mutant bacteriophage being characterized by (i) a wild-type immunity region which regulates lysogeny and (ii) genes essential for replication of the bacteriophage, one of which is closely linked to the immunity region and which closely linked gene is in a mutated form which blocks the multiplication of the infecting bacteriophage within said cells; and

(b) said isolated bacteriophage DNA is a wild-type DNA homologous to the DNA of the bacteriophage with which said cells were infected, said wild-type DNA having been brought into reactive relation with said substance to be assayed for potential mutagenicity, thereafter separated therefrom, and transfected into said cells;

(2) assaying the transfected/infected cells for the production of clear plaquing mutant bacteriophage.

4,469,787

IMMUNOASSAY INVOLVING SOLUBLE COMPLEX OF SECOND ANTIBODY AND LABELED BINDING PROTEIN

James W. Woods, Creve Coeur; John N. St. Denis, Maryland Hts., and Dana A. Chapman, Overland, all of Mo., assignors to Mallinckrodt Inc., St. Louis, Mo.

Filed May 14, 1982, Ser. No. 378,126
Int. Cl.³ G01N *33/54, 33/56, 33/58, 33/76*
U.S. Cl. 435—7 16 Claims

1. A method for quantitatively determining the presence of polyvalent ligand in an aqueous fluid which comprises:

(a) incubating said fluid with a solid support having a first antibody to said ligand bound thereto to form an immobilized antibody-ligand complex;

(b) incubating said immobilized antibody-ligand complex with a solution containing a soluble complex of a second antibody to said ligand and a labeled binding protein specifically bound to the F_c portion of said second antibody;

(c) washing unbound antibody and labeled binding protein from the solid support; and

(d) determining the presence of labeled binding protein bound to said solid support or remaining in solution, as a measure of the concentration of the ligand in the aqueous fluid;

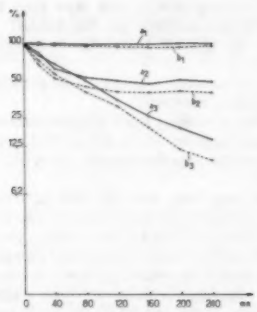
wherein said method is further characterized in that the solution of second antibody-labeled binding protein complex contains an excess concentration of second antibody to provide a substantially linear relationship between the concentration of ligand and the amount of labeled binding protein bound to the solid support, while maintaining analytically acceptable low levels of background interference.

4,469,788

PROCESS OF IN VITRO DIAGNOSIS OF CYSTIC FIBROSIS

Peter Hösli, Paris, France, assignor to Institut Pasteur, Paris, France

Continuation of Ser. No. 154,630, May 30, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,846
Claims priority, application France, Jun. 1, 1979, 79 14234
Int. Cl.³ C12Q *1/34, 1/42*
U.S. Cl. 435—18 4 Claims



1. A process for the in vitro diagnosis of cystic fibrosis based on the stability of α-mannosidase which is affected by a genetic defect related to cystic fibrosis and which is less stable thermally when it originates from individuals having said genetic defect than when it originates from individuals without said genetic defect, and wherein the degree of thermal inactivation at a temperature of 41° C. and a neutral pH of said α-mannosidase from individuals with said genetic defect relative to the degree of thermal inactivation at 41° C. of said α-mannosidase from individuals without said genetic defect has been predetermined, comprising

obtaining a sample of said α-mannosidase originating from an individual to be diagnosed for said genetic defect;

measuring the degree of thermal inactivation of said α-mannosidase sample at as temperature of about 41° C. and at a neutral pH;

comparing the degree of inactivation of said sample of α-mannosidase with the predetermined degrees of inactivation of said α-mannosidase originating from an individual without said genetic defect and from said individual having said genetic defect to determine whether the individual being diagnosed has said genetic defect.

3. A process for the in vitro diagnosis of cystic fibrosis based on the stability of acid phosphatase which is affected by a genetic defect related to cystic fibrosis, and which is less stable thermally when it originates from individuals having said genetic defect than when it originates from individuals without said genetic defect, and wherein the degree of thermal inactivation at a temperature of 36.5° C. and at a neutral pH of said acid phosphatase from individuals with said genetic defect relative to the degree of thermal inactivation at 36.5° C. of said acid phosphatase from individuals without said genetic defect has been predetermined, comprising

obtaining a sample of said acid phosphatase originating from an individual to be diagnosed for said genetic defect;

measuring the degree of thermal inactivation of said acid phosphatase sample at a temperature of about 36° C. and at a neutral pH.

comparing the degree of inactivation resulting from said measurement relative to the degrees of inactivation respectively of said acid phosphatase from individuals with siad genetic defect and from individuals without said genetic defect, to determine whether the individual being diagnosed has said genetic defect.

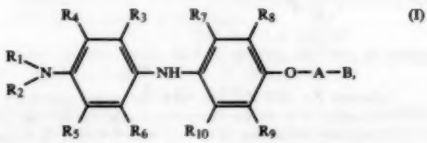
4,469,789

AMINO ACID AND PEPTIDE ESTERS OF LEUKO-INDOANILINE COMPOUNDS AND COMPOSITIONS FOR THE DETECTION OF PROTEOLYTIC ENZYMES

Dieter Berger, Viernheim; Franz Braun, Rimbach; Günter Frey, Ellerstadt; Wolfgang-Reinhold Knappe, Buerstadt; Manfred Kuhr, and Wolfgang Werner, both of Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,205
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005845
Int. Cl.³ C12Q *1/38, 1/36*
U.S. Cl. 435—23 13 Claims

1. Composition for detection of proteolytic enzymes comprising a buffering substance and, as a chromogen, an effective amount for use as a chromogen for the detection of proteolytic enzymes of at least one leuko-indoaniline amino acid ester or a peptide ester compound of the formula



(I)

wherein

R_1 and R_2, which can be identical or different, each is hydrogen, a lower alkyl or a hydroxy-lower alkyl group; or

R_1 and R_2 together are an alkylene or alkylene-oxy-alkylene chain;

R_3, R_4, R_5 and R_6, which can be identical or different, each

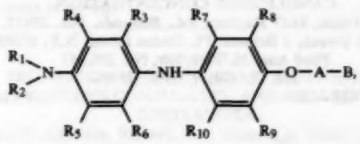
is hydrogen or halogen, lower alkyl, lower haloalkyl, lower alkoxy, an aralkoxy, a hydroxy, or a nitro group;

R_7, R_8, R_9 and R_{10}, which can be identical or different, each is hydrogen or halogen; a substituted or unsubstituted group selected from the group consisting of a lower alkyl, lower haloalkyl, lower alkoxy, an aralkoxy, a lower acylamino, an acylalkenyl, a hydroxy, a lower alkylmercapto, a lower alkyl sulfonyl, a carboxy, or a carbonyl group a group wherein two adjacent substituents form a saturated or unsaturated hydrocarbon chain, or a saturated or unsaturated hydrocarbon chain containing a nitrogen atom in the chain;

A is an amino acid or a peptide radical; and

B is an amine protective group.

12. Method of detecting proteolytic enzymes in a sample, which method comprises contacting a buffering substance and at least one chromogen selected from the leuko-indoaniline amino acid and peptide ester compounds under conditions wherein the enzymes will split the esters into leuko-indoaniline compounds which are deep blue colored, of the formula



(I)

wherein

R_1 and R_2, which can be identical or different, each is hydrogen, a lower alkyl or a hydroxy-lower alkyl group; or

R_1 and R_2 together are an alkylene or alkylene-oxy-alkylene chain;

R_3, R_4, R_5 and R_6, which can be identical or different, each is hydrogen or halogen, lower alkyl, lower haloalkyl, lower alkoxy, an aralkoxy, a hydroxy, or a nitro group;

R_7, R_8, R_9 and R_{10}, which can be identical or different, each is hydrogen or halogen; a substituted or unsubstituted group selected from the group consisting of a lower alkyl, lower haloalkyl, lower alkoxy, an aralkoxy, a lower acylamino, an acylalkenyl, a hydroxy, a lower alkylmercapto, a lower alkyl sulfonyl, a carboxy, or a carbonyl group a group wherein two adjacent substituents form a saturated or unsaturated hydrocarbon chain, or a saturated or unsaturated hydrocarbon chain containing a nitrogen atom in the chain;

A is an amino acid or a peptide radical; and

B is an amine protective group and thereafter measuring the color intensity of the indoaniline formed.

4,469,790

CONTINUOUS AND SPONTANEOUS INTERFERON PRODUCING LYMPHOBLASTOID CELL LINES, PROCESS FOR PREPARING THE SAME, AND PROCESS FOR THE HUMAN INTERFERON PRODUCTION BY THE SAME

Isao Yamane; Takeshi Sato; Toshio Kudo, all of Sendai; Yoshiki Minamoto, Yokohama, and Takehiko Tachibana, Sendai, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Sep. 18, 1981, Ser. No. 303,517

Claims priority, application Japan, Sep. 18, 1980, 55-129679

Int. Cl.³ C12P *21/00;* **C12N** *15/00, 5/00;* **C12R** *1/91*

U.S. Cl. 435—68 **2 Claims**

1. A process for preparing a continuous and spontaneous human-interferon-producing lymphoblastoid cell line, which comprises:

transforming human lymphocytes isolated from a human infant from birth up to about 2 years, a new-born infant, or an aborted human fetus, wherein said transforming is performed with Epstein Barr Virus and wherein multiple human lymphocytes are transformed to give multiple transformed cell lines, and

selecting a cell line from said transformed cell lines which produces more than 1000 units of interferon per milliliter when cultivated at a cell density of 10^6 cells per milliliter in the absence of any interferon inducer.

4,469,791

GENETICALLY ENGINEERED MICROORGANISMS FOR MASSIVE PRODUCTION OF AMYLOLYTIC ENZYMES AND PROCESS FOR PREPARING SAME

Charles A. Colson; Pierre E. Cornelis, both of Dion-Valmont; Colette S. Digneffe, Rosieres, and Corinne Walon, Wavre, all of Belgium, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Feb. 13, 1981, Ser. No. 234,140

Claims priority, application United Kingdom, Feb. 15, 1980, 8005184; Apr. 10, 1980, 8011842

Int. Cl.³ C12N *15/00, 1/20, 9/28;* **C12R** *1/19*

U.S. Cl. 435—253 **11 Claims**

1. Recombinant DNA containing an amylase or pullulanase gene consisting of a phage selected from the group consisting of NCIB No. 11569, NCIB No. 11572, NCIB No. 11574, NCIB No. 11593, NCIB No. 11604, and mutants thereof.

4,469,792

BLOOD GAS CALIBRATION AND CONTROL FLUID UTILIZING STROMA-FREE HEMOGLOBIN

Richard S. Simmonds, Landing, N.J., and Wells P. Owen, Nyack, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 221,640, Dec. 31, 1980, abandoned, and a continuation-in-part of Ser. No. 221,639, Dec. 31, 1980, abandoned. This application Aug. 5, 1981, Ser. No. 290,174

Int. Cl.³ C09K *3/00;* **G01N** *33/68, 33/96*

U.S. Cl. 436—11 **12 Claims**

1. A stable reference fluid comprising substantially pure stroma-free hemoglobin solution, a source of bicarbonate ion, a buffer and predetermined amounts of gases present in in vivo blood.

4,469,793

METHOD AND APPARATUS FOR DISPENSING A PREDETERMINED DOSE OF A SAMPLE LIQUID INTO A RECEPTOR CELL

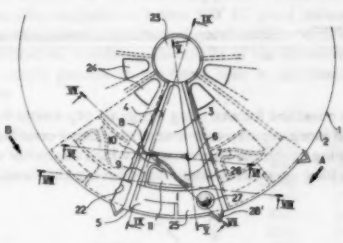
Jean Guigan, 9, rue Jean Mermoz, 75008 Paris, France

Filed Apr. 7, 1982, Ser. No. 366,130

Claims priority, application France, Apr. 14, 1981, 81 07437

Int. Cl.³ G01N *9/30*

U.S. Cl. 436—45 **14 Claims**



1. Apparatus for dispensing a predetermined dose of a sample liquid for performing a chemical reaction with said liquid, said apparatus comprising:

a rotor including a rotatable containing having a vertical axis of rotation;

a radially inner basin having radial partitions dividing said basin into a plurality of compartments for receiving an approximately-determined volume of said sample liquid, said approximately-determined volume being greater than said predetermined dose;

a plurality of receptor cells regularly distributed around the periphery of said rotor for receiving said liquid in said predetermined doses; and

means for converying said liquid radially from said compartments to corresponding receptor cells under the effect of centrifugal force when said rotor is caused to rotate;

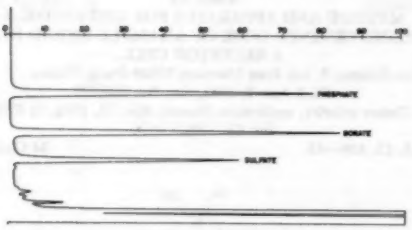
and wherein said apparatus comprises, between each compartment in said basin and a corresponding receptor cell, a measurement chamber having an inlet orifice in communication with said compartment, and an outlet orifice, and an overflow chamber, said inlet and outlet orifices delimiting a volume corresponding to said predetermined dose, and wherein said outlet orifice leads to means responsive to the direction of rotation of the rotor to direct liquid issuing therefrom either to said overflow chamber when said rotor is rotating in a first direction, or else to said receptor cell when said rotor is rotating in a second, opposite direction.

4,469,794

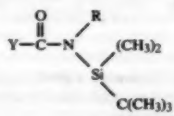
SILYLATION OF INORGANIC OXY-ANIONS

Thomas P. Mawhinney, Columbia, Mo., and Michael A. Madson, Clear Lake, Iowa, assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Mar. 1, 1982, Ser. No. 353,359
Int. Cl.³ G01N *31/08*
U.S. Cl. 436—127 **6 Claims**

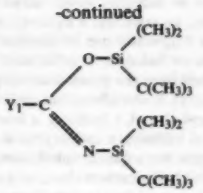


1. In a method for analyzing inorganic oxy-anions by silylating said inorganic oxy-anions under silylating conditions with a silylating agent, the improvement which comprises selecting the silylting agent from compounds having the structure:



or,

-continued



wherein:

R is lower alkyl having 1 to 5 carbon atoms,

Y is hydrogen, lower alkyl having 1 to 5 carbon atoms, or perfluoroloweralkyl having 1 to 5 carbon atoms, and

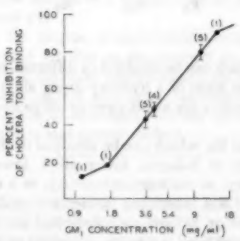
Y_1 is hydrogen or lower alkyl having 1 to 5 carbon atoms.

4,469,795

RADIOASSAY FOR MONOSIALOGLYCOSPHINGOLIPID (G_{M1}) GANGLIOSIDE CONCENTRATION

Edward Ginns, 8617 Rayburn Rd., Bethesda, Md. 20817, and Joseph French, 2 Belmont Pl., Staten Island, N.Y. 10301

Filed Aug. 26, 1981, Ser. No. 296,467
Int. Cl.³ G01N *33/50, 33/60*
U.S. Cl. 436—504 **8 Claims**



1. A method of conducting a radioassay for G_{M1} ganglioside concentration in cerebrospinal fluid utilizing the high affinity interaction between cholera enterotoxin and G_{M1} ganglioside comprising the steps of preparing a radioiodinated cholera toxin solution, preparing liver membranes from a 0.25 M sucrose homogenate, preparing several quantities of known G_{M1} ganglioside concentration in solution, obtaining a count of 125 iodine cholera toxin bound to liver membranes by means of radioassay of various mixtures of said iodotoxin solution, liver membranes and respective G_{M1} ganglioside solutions, preparing a standard curve showing the variation in inhibition of cholera toxin binding to liver membranes for different mixtures of G_{M1} ganglioside concentrations, repeating the above steps on a solution of unknown G_{M1} ganglioside concentrations and comparing the results of said repeated steps with said standard curve to determine the amount of said unknown G_{M1} ganglioside concentration.

4,469,796

ASSAYING METHODS INVOLVING BIOSPECIFIC AFFINITY REACTIONS

Rolf E. A. V. Axén, Bälinge; Sven O. H. Oscarsson, Örbyhus; Per H. G. Ponterius, and Jan P. E. Carlsson, both of Uppsala, all of Sweden, assignors to Pharmacia Diagnostics AB, Uppsala, Sweden

Filed May 5, 1981, Ser. No. 260,684
Claims priority, application Sweden, May 19, 1980, 8003732
Int. Cl.³ G01N *33/50*
U.S. Cl. 436—518 **4 Claims**

1. In assaying methods involving biospecific affinity reac-

tions, in which there are used from 2 to 4 reactants, one of which, reactant (I), is labelled with at least one analytically indicatable atom or group and is soluble in the aqueous liquid in which the biospecific affinity reaction is carried out, the reactants forming, by means of biospecific affinity reactions, a conjugate in which labelled reactant (I) is incorporated, and in which assaying methods the analytically indicatable atom or group is assayed in the conjugate and/or in labelled reactant (I) not bound to the conjugate, the improvement which comprises

(a) binding, after the formation of the conjugate, the formed conjugate or labelled reactant (I) not bound to the conjugate convalently to an insoluble carrier or to an insolubilizable carrier, which latter is made insoluble after the covalent binding has been carried out, said carrier and said unlabelled reactant incorporated in the conjugate each exhibiting a respective type of reactive groups being of the kind capable of reacting with one another to form a covalent bond between the carrier and said reactant, and none of the reactive groups being present in any other of the reactants incorporated in the conjugate and the unlabelled reactant not competing with labelled reactant (I), and

(b) then carrying out the assay of the analytically indicatable atom or group.

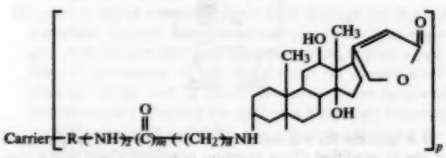
4,469,797

DIGOXIGENIN IMMUNOGENS, ANTIBODIES, LABELED CONJUGATES, AND RELATED DERIVATIVES

James P. Albarella, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 23, 1982, Ser. No. 422,217
Int. Cl.³ G01N *33/54, 33/58*
U.S. Cl. 436—536 **22 Claims**

1. A digoxigenin immunogen conjugate of the formula:



wherein Carrier is an immunogenic carrier material, R is a bond or a linking group, one of l and m is one and the other is zero, n is an integer from 2 through 10, and p is on the average from 1 to about 50.

10. An antibody prepared against the conjugate of claim **1**.

15. In an immunoassay method for determining digoxin in a test sample, wherein the test sample is contacted with an antibody to digoxin and with a labeled conjugate comprising digoxin or a binding analog of digoxin and a label, and wherein thereafter the relative amount of the labeled conjugate that becomes bound to said antibody is determined,

the improvement which comprises employing the antibody of claim **10**, **11** or **12** as the antibody to digoxin.

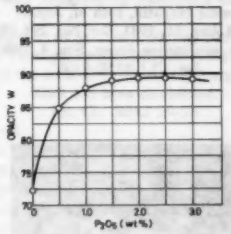
4,469,798

LOW MELTING, OPAQUE ENAMEL FRIT

Atsushi Nishino, Neyagawa; Kunio Kimura; Masaki Ikeda, both of Hirakata, and Hajime Oyabu, Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Oct. 12, 1982, Ser. No. 433,819
Claims priority, application Japan, Oct. 13, 1981, 56-163253
Int. Cl.³ C03C *5/02*
U.S. Cl. 501—14 **5 Claims**

1. A low melting, opaque enamel frit free of lead which consists essentially of a combination of 30 to 36 wt % of SiO_2, 15 to 20 wt % of B_2O_3, 7 to 9 wt % of Na_2O, 5 to 10 wt % of ZrO_2, 10 to 17 wt % of TiO_2, 7 to 15 wt % of K_2O, 2 to 10 wt % of F_2, and 0.5 to 2.5 wt % of P_2O_5 as a stabilizer for the crystallized titanium oxide to enlarge the stable region of anatase in the crystallized titanium oxide, the total of Na_2O and K_2O being in the range of 14 to 20 wt %, the total of TiO_2+-



ZrO_2 being in the range of 15 to 20 wt %, the $ZrO_2/(TiO_2+ZrO_2)$ ratio being in the range of 0.25 to 0.5:1, the SiO_2/B_2O_3 ratio being in the range of 1.5 to 2.4:1, the Na_2O/K_2O ratio being in the range of 0.6 to 1.0:1, the $(Na_2O+K_2O)/(TiO_2+ZrO_2)$ being in the range of 0.7 to 1.2:1.

4,469,799

EASILY MELTABLE DENSE OPAL GLASSES

William H. Dumbaugh, Jr., Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 25, 1983, Ser. No. 487,965
Int. Cl.³ C03C *3/04, 3/30*
U.S. Cl. 501—32 **2 Claims**

1. An easily meltable, thermally opacifiable, dense white opal glass having a melting temperature no higher than about 1400° C., an opal liquidus no higher than about 1150° C., and a softening point above about 700° C., said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of 7–12% Na_2O, 0.8–3.8% CaO, 3–7% Al_2O_3, 4–8% B_2O_3, 69–75% SiO_2, and 3.5–4.5% F.

4,469,800

MOLDABLE FLUOROBORATE OPTICAL GLASSES

Jean E. Boudot, and Jean P. Mazeau, both of Avon, France, assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 28, 1983, Ser. No. 518,045
Claims priority, application France, Sep. 2, 1983, 83 02037
Int. Cl.³ C03C *3/00, 3/30*
U.S. Cl. 501—43 **2 Claims**

1. A moldable optical glass of the fluoroborate type having an index of refraction of about 1.665–1.71, a coefficient of dispersion of about 46–56, a softening point of about 535°–590° C., a transition temperature below 500° C., good resistance to attack by atmospheric agents, and good stability with respect to devitrification, consisting essentially of the following contents in weight percent on the oxide basis as calculated from the batch:

B_2O_3	24–35
BaO	8–25
La_2O_3	17–32
PbO	0–20
ZnO	0–10
CdO	0–10
SrO	0–8
BaO + La_2O_3 + PbO + ZnO + CdO + SrO	58–67
Li_2O	1–3
Na_2O	0–2.5
Li_2O + Na_2O	1.5–3.5
F	2.5–6.5

4,469,801

TITANIUM-CONTAINING SILICON NITRIDE FILM BODIES AND A METHOD OF PRODUCING THE SAME

Toshio Hirai, 4-91, Takamori 3-Chome, Izumi City; Shinsuke Hayashi, 4-1-1501, Sakuragaoka-Koen, Sendai City, both of Japan, and Akira Ohkubo, Sendai, Japan, assignors to Toshio Hirai and Shinsuke Hayashi, both of, Japan

Filed Aug. 31, 1981, Ser. No. 298,109
Claims priority, application Japan, Sep. 4, 1980, 55-121690
Int. Cl.³ B32B 9/00
U.S. Cl. 501—96 2 Claims

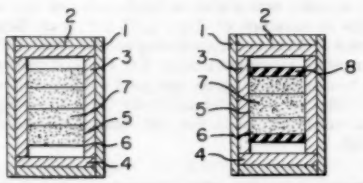
1. A titanium-containing silicon nitride film body consisting mainly of α-type crystal, containing particle-like titanium nitride deposited in said crystal, and having a crystal orientation of a crystal face (OOl) of said α-type crystal.

4,469,802

PROCESS FOR PRODUCING SINTERED BODY OF BORON NITRIDE

Tadashi Endo; Osamu Fukunaga, and Tadao Sato, all of Ibaraki, Japan, assignors to National Institute for Researches in Inorganic Materials, Ibaraki, Japan

Filed Dec. 17, 1982, Ser. No. 450,734
Claims priority, application Japan, Apr. 7, 1982, 57-57549
Int. Cl.³ C04B 35/58
U.S. Cl. 501—96 4 Claims



1. A process for producing a sintered body of cubic system boron nitride which comprises steps of:

(a) mixing raw material boron nitride selected from the group consisting of hexagonal system boron nitride, cubic system boron nitride, and a mixture thereof with $Me_3B_2N_4$ (where: Me represents an alkaline earth metal) in an amount of from 0.15 to 3.0 mol %; and

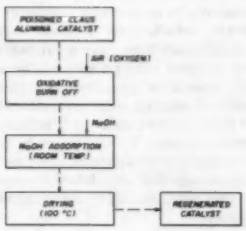
(b) treating said mixed material at a temperature of 1350° C. and above under a thermodynamically stabilized pressure condition of the cubic system boron nitride.

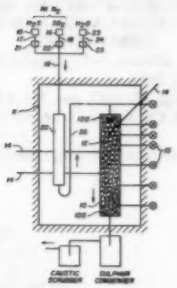
4,469,803

REGENERATION PROCESS FOR POISONED CLAUS ALUMINA CATALYST, INCLUDING NAOH ACTIVATION

Zacheria M. George, Edmonton, Canada, assignor to Alberta Research Council, Edmonton, Canada

Filed Mar. 1, 1983, Ser. No. 471,198
Int. Cl.³ B01J 21/20; C01B 17/04
U.S. Cl. 502—25 4 Claims





1. A process for regenerating an alumina catalyst poisoned by use in modified Claus reaction converters and being contaminated with carbon, sulfur and sulfate and having a low surface area, comprising:

(a) first subjecting the catalyst to an oxidative burn-off to remove sulfur and carbon;

(b) then contacting the catalyst with a base to produce a catalyst with enhanced Claus activity.

3. The process as set forth in claim 1 wherein the base used is 0.75 to 1.25 molar aqueous sodium hydroxide solution.

4. The process as set forth in claim 3 wherein the burn-off is conducted at a temperature in the range of 500°–530° C., and an excess of sodium hydroxide solution, over that needed to fill the pore volume of the catalyst, is used.

4,469,804

NIOBIUM OR TANTALUM/HALOGEN-CONTAINING CATALYST REGENERATION PROCESS

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 23, 1983, Ser. No. 535,101
Int. Cl.³ B01J 27/32, 27/12, 27/10, 23/20
U.S. Cl. 502—32 4 Claims

1. A process for reactivating a catalyst comprising pentavalent niobium or tantalum, halogen, oxygen and an oxide substrate selected from the group consisting of silica, silica-alumina, zeolite, open lattice clays and mixtures thereof wherein at least one valence of the niobium or tantalum is bound to oxygen which is bound to the substrate, at least one valence of the niobium or tantalum is bound to halogen and the

remaining niobium or tantalum valences are bound to halogen and/or oxygen which may or may not be bound to the substrate, which catalyst has been deactivated by contact with oxygen or an oxygen-containing compound wherein said oxygen is weakly covalently bound to said compound, which process comprises contacting said catalyst with a liquid or gaseous halogenated hydrocarbon at conditions which are thermodynamically suitable for converting niobium or tantalum pentoxide to niobium or tantalum pentahalide for a time to render said catalysts sufficiently active to catalyze hydrocarbon reactions.

2. The process of claim 1 wherein said halogenated hydrocarbon has a carbon number ranging from 1 to about 4.

3. The process of claim 2 wherein the halogenated hydrocarbon has a carbon number ranging from 1 to about 2.

4,469,805

REGENERATION OF FILTER CLAY WITH LIQUID METHANOL

William A. Kofke, Jr., Irwin, and Ilia Milson, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 25, 1982, Ser. No. 436,602

Int. Cl.³ B01J *20/34;* **C10G** *25/12, 25/00*

U.S. Cl. 502—33 **8 Claims**

1. A process for regeneration of a bed of a particulate, adsorbent material that is at least partly saturated with organic, nitrogen-containing, polar-type contaminant material which has been previously removed from a transformer oil charge stock by percolating said charge stock through the bed of adsorbent material, which process comprises:

(a) discontinuing flow of the transformer oil charge stock through the adsorbent bed;

(b) passing liquid methanol wash fluid through the bed of adsorbent material, whereby at least a portion of the nitrogen-containing polar-type contaminant and at least a portion of the residue of the transformer oil charge stock retained in the bed of adsorbent material are removed therefrom, and whereby the methanol wash fluid becomes partially contaminated with the nitrogen-containing polar-type contaminant;

(c) collecting the mixture of partially contaminated methanol wash fluid and the transformer oil charge stock in a separating zone;

(d) recovering contaminated methanol wash fluid from the mixture thereof with transformer oil charge stock in the separating zone by non-distillative separation;

(e) recycling the contaminated methanol wash fluid through the adsorbent material, whereby additional nitrogen-containing polar-type liquid contaminant material is removed from the adsorbent material; and

(f) continuing the collection, separation and recycling of the contaminated methanol only until the nitrogen-containing polar-type contaminant in the bed of adsorbent material has been substantially removed therefrom.

2. A process for the regeneration of a bed of contaminated adsorbent material in accordance with claim 1 in which the contaminated methanol wash fluid is recovered by gravity separation from the rinsed-out portion of the non-miscible, residual hydrocarbon charge material.

5. A process for the regeneration of a bed of contaminated adsorbent material in accordance with claim 2 in which the residue of contaminated liquid methanol wash fluid in the adsorbent material is displaced by the injection of superheated vaporized methanol into the bed of adsorbent material.

6. A process for the regeneration of a bed of contaminated adsorbent material in accordance with claim 5 in which residual methanol vapor in the adsorbent material is displaced with a hot, inert gas.

4,469,806

ORGANOPHOSPHORUS-TREATED ZEOLITE CATALYSTS FOR PARA-SELECTIVE AROMATICS CONVERSION

Nancy P. Forbus, Newtown, Pa., and Warren W. Kaeding, Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 359,560, Mar. 18, 1982, Pat. No. 4,409,132. This application Apr. 28, 1983, Ser. No. 489,424

The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.

Int. Cl.³ B01J *29/28*

U.S. Cl. 502—62 **8 Claims**

1. A method for treating a chemically modified zeolite catalyst useful for promoting the para-selective conversion of aromatic compounds to dialkyl substituted benzene materials, said catalyst comprising both a crystalline zeolite material having a constraint index within the approximate range of 1 to 12 and a silica/alumina mole ratio of at least 12 and a minor proportion of one or more difficultly reducible oxides, said method comprising contacting said catalyst with a vapor phase organophosphorus reagent selected from C_{1-4} alkyl phosphite esters, C_{1-4} alkyl phosphate esters and dimethylmethylphosphonate, at a temperature of 100° C. to 300° C. and for a period of time and under conditions sufficient to either enhance para-selectivity of said catalyst or to reduce the susceptibility of said catalyst to deselectivation by contact with moisture or halogen.

2. A method according to claim 1 wherein said difficultly reducible oxide is selected from magnesium oxide, calcium oxide, phosphorus oxide, combinations of magnesium oxide and phosphorus oxide and combinations of calcium oxide and phosphorus oxide.

4,469,807

CATALYST AND PROCESS FOR HYDROPROCESSING HEAVY OILS

Costandi A. Audeh, Princeton, N.J., and Tsoung-Yuan Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 27, 1982, Ser. No. 402,400

Int. Cl.³ B01J *21/14, 29/30*

U.S. Cl. 502—74 **14 Claims**

1. A process for making an improved sepiolite-based hydroprocessing catalyst comprising first contacting said sepiolite with an aqueous solution of a first metal salt, then contacting the resultant metal ion-exchanged sepiolite with an aqueous solution of a compound of a second metal selected from the group consisting of molybdenum, tungsten and vanadium, and finally contacting the resultant metal-exchanged sepiolite product with an aqueous solution of a magnesium compound, thereby effecting a magnesium ion-exchange with the metal-exchanged sepiolite product and neutralizing acid sites on said sepiolite product.

2. The process of claim 1 wherein said first metal salt is a salt of a metal selected from the group consisting iron, cobalt and nickel.

7. The catalyst produced according to the method of claims 1, 2, 3, 4, 5 or 6.

8. A hydrodemetalization catalyst comprising a mixture of a catalyst produced by the process of claims 1, 2, 3, 4, 5 or 6 and a high silica/alumina mole ratio zeolite.

4,469,808

PERMIONIC MEMBRANE ELECTROLYTIC CELL

Malcolm Korach, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 263,329, May 13, 1981, Pat. No. 4,389,297, which is a division of Ser. No. 195,570, Oct. 9, 1980, Pat. No. 4,299,675. This application Jan. 17, 1983, Ser. No. 458,387

Int. Cl.³ C25B *11/04*

U.S. Cl. 502—101 1 Claim

1. A method of preparing an electrode comprising co-depositing a catalytic metal and a leachable metal on an electroconductive, metallic substrate, leaching out the leachable metal whereby to provide a porous, electrocatalytic surface on the metallic electroconductive substrate, treating a hydrophilic, electrolyte resistant, resin material deposited atop said porous electrocatalyst surface to cause the resin to flow and thereby obtain a firmly bonded assembly of resin, electrocatalyst and metallic substrate.

4,469,809

METHOD FOR MAKING A DICYCLOPENTADIENE THERMOSET POLYMER

Daniel W. Klosiewicz, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 342,453, Jan. 25, 1982, Pat. No. 4,400,340. This application Mar. 7, 1983, Ser. No. 472,685

Int. Cl.³ C08F *4/62*

U.S. Cl. 502—117 4 Claims

1. A catalyst part of a metathesis-catalyst system comprising:
a catalyst;
a Lewis base or chelant;
a phenolic compound;
a solvent;
an alkylaluminum activator; and
a moderator,
wherein the molar ratio of catalyst to Lewis base or chelant is about 1:5; wherein said catalyst is selected from the group consisting of tungsten hexahalide and tungsten oxyhalide; wherein said phenolic compound is selected from the group consisting of phenol, alkyl-phenols and halogenated phenols, where the phenolic compound is present in a molar ratio of tungsten compound to phenolic compound of from about 1:1 to about 1:3; wherein said solvent is selected from the group consisting of benzene, toluene, chlorobenzene, dichlorobenzene and trichlorobenzene; wherein the solvent is present in a sufficient amount so that the catalyst concentration is between about 0:1 and about 0.7 mole per liter of solvent; wherein said alkylaluminum activator is selected from the group consisting of trialkylaluminum, dialkylaluminum halides, and alkylaluminum dihalides; and wherein said moderator is selected from the group consisting of isopropyl ether, di-n-butyl ether, ethyl benzoate, phenylethyl acetate and diisopropyl ketone.

4,469,810

PROCESS FOR THE CALCINATION OF PHOSPHORUS-MOLYBDENUM CATALYST

Masaaki Kato, Hatsukaichi; Masatake Kamogawa, Otake; Toshiharu Nakano, Otake, and Junji Furuse, Otake, all of Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Jan. 11, 1983, Ser. No. 457,220

Int. Cl.³ B01J *27/14*

U.S. Cl. 502—209 7 Claims

1. A process for improving the operating characteristics of a phosphorous-, molybdenum-, and oxygen-containing catalyst used for the production of an unsaturated carboxylic acid by gas phase catalytic oxidation of a corresponding unsaturated aldehyde, comprising the step of:
calcinating said catalyst at a temperature of 300°–500° C. while a gas containing 0.05–3 vol. % of ammonia and/or steam is passed over said catalyst prior to using said catalyst for the production of said acid.

4,469,811

PROCESS FOR THE PREPARATION OF A C_2–C_4 PARAFFIN DEHYDROGENATION CATALYST

Jacques P. Lucien, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 16, 1983, Ser. No. 504,930

Claims priority, application Netherlands, Jul. 1, 1982, 8202647

Int. Cl.³ B01J *21/04, 23/58, 23/62, 27/06*

U.S. Cl. 502—227 6 Claims

1. A process for the preparation of a catalyst suitable for the dehydrogenation of C_2–C_4 paraffins, characterized in that the preparation is carried out as follows:
(a) impregnating an alumina carrier with an aqueous solution of a tin compound;
(b) drying and calcining the composition;
(c) impregnating the composition with an aqueous solution of a platinum compound;
(d) drying and reducing the composition;
(e) removing at least part of the halogen ions, which were introduced into the composition by using a halogen-containing platinum compound and/or tin compound in steps (a) and/or (c), by treating the composition with a non-acidic aqueous solution comprising NH_4^+ ions to provide a final catalyst containing less than 0.1%w of halogen; and
(f) drying and impregnating the composition with a non-acidic aqueous solution of an alkali metal compound and drying same.

4,469,812

REFORMING CATALYST CONTAINING A GROUP VIII NOBLE METAL, A GROUP VIII NON-NOBLE METAL, AND GALLIUM ON SEPARATE SUPPORT PARTICLES

Cecelia M. Sorrentino, Naperville, Ill.; Regis J. Pellet, Croton-on-Hudson, N.Y., and Ralph J. Bertolacini, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 16, 1983, Ser. No. 533,145

Int. Cl.³ B01J *21/04, 23/62, 23/82, 27/08*

U.S. Cl. 502—230 7 Claims

1. A catalyst, which catalyst comprises a physical particle-form mixture of a Component A, a Component B, and a Component C, said Component A comprising at least one Group VIII noble metal deposed on a solid catalyst support material providing acidic catalytic sites, said Component B comprising a small amount of a non-noble metal of Group VIII selected from cobalt, nickel, and mixtures thereof deposed on a solid catalyst support material providing acidic catalytic sites, said Component C comprising a small amount of gallium deposed on a solid catalyst support material providing acidic catalytic sites, and said catalyst having been prepared by thoroughly and intimately blending finely-divided particles of said Components A, B, and C to provide a thoroughly-blended composite.

4,469,813

PROCESS FOR THE PREPARATION OF CATALYTICALLY ACTIVE CROSS-LINKED METAL SILICATES

Jan Gaaf, Amsterdam, Netherlands, and Rutger A. van Santen, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 18, 1983, Ser. No. 476,678

Claims priority, application Netherlands, Mar. 29, 1982, 8201289

Int. Cl.³ B01J *29/06;* C01B *33/26, 33/28*

U.S. Cl. 502—263 7 Claims

1. A process for the preparation of catalytically active cross-linked metal silicates wherein a crystalline metal silicate having a crystal lattice largely consisting of a triple layer structure, composed of a center layer of octahedrally co-ordinated aluminum entirely or partly replaced by nickel and/or cobalt and two outer layers of tetrahedrally co-ordinated silicon partly replaced by aluminum, is mixed with one or more polymerized

hydroxy metal complexes, and the mixture is then dried at temperatures of from 70° C.–200° C., subsequently calcined at temperatures of 300° C.–400° C. at atmospheric or elevated pressure, and is subsequently heated to a temperature of 300°–450° C. for at least 15 minutes at an absolute pressure of at most 0.1 bar.

4,469,814

CATALYSTS

Joseph G. Robinson, Winchcombe, and David I. Barnes, Cheltenham, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Nov. 22, 1983, Ser. No. 554,246

Claims priority, application United Kingdom, Dec. 10, 1982, 8235330

Int. Cl.³ B01J *21/12, 20/32, 23/46, 23/74*

U.S. Cl. 502—263 **11 Claims**

1. A process for the production of synthetic catalysts comprising the steps of:

(a) treating a dry highly porous amorphous silica xerogel with an anhydrous hydrolysable compound of aluminum in an amount sufficient to cover up to 90% of the BET surface area of the silica with a monolayer of the compound and removing the solvent;

(b) causing the surface of the silica to react with the compound by heating to a temperature of from 300° C. to 1200° C. to yield a material having a maximum pore diameter of about 1.1 nm, and

(c) treating the product material of step (b) with an ammonium salt solution capable of exchanging labile cations for ammonium ions, washing the treated material with deionised water until no further ammonium cations can be detached.

4,469,815

CATALYST AND METHOD OF PREPARATION

Rodney M. Sambrook, Dronfield, and Julian R. H. Ross, Gomersal, both of England, assignors to Dyson Refractories Limited, England

Filed Jul. 16, 1981, Ser. No. 283,793

Claims priority, application United Kingdom, Jul. 16, 1980, 8023224; Jul. 16, 1980, 8023226

Int. Cl.³ B01J *21/04, 23/10, 23/78*

U.S. Cl. 502—303 **23 Claims**

1. A catalyst derived from a precursor of the approximate chemical composition

$$Ni_{6-z}Al_xLa_yMg_z(CO_3)_{x+y}/2(OH)_{12+2(x+y)}nH_2O$$

where z is not less than 0.1 and not greater than 4; x is not less than 1 and not greater than 4; y is not less than 0.05 and not greater than 1.5 and n is approximately 4, wherein said precursor is calcined and then reduced to form said catalyst.

4,469,816

PALLADIUM ON ALUMINA AEROGEL CATALYST COMPOSITION AND PROCESS FOR MAKING SAME

John N. Armor, Morris Plains, and Emery J. Carlson, Chatham, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 14, 1982, Ser. No. 449,720

Int. Cl.³ B01J *21/04, 23/44*

U.S. Cl. 502—333 **8 Claims**

1. A catalyst composition comprising a uniform dispersion of individual particles of metallic palladium, substantially free of clusters of said particles, on an alumina aerogel support, said composition having a BET surface area in the range of about 20 to about 700 m^2/g, a pore volume in the range of about 1.5 to about 12 cm^3/g, a bulk density in the range of about 0.003 to about 0.5 g/cm^3 and having a Pd^o/Al_2O_3 wgt. ratio of about 1:1000 to about 1:5.

4,469,817

METHOD FOR RECLAMATION OF VULCANIZED RUBBER

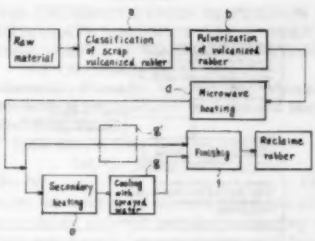
Keizo Hayashi, Nagoya; Atsushi Sumida, Inazawa; Teruo Murayama, Niiza, and Tomio Minobe, Fuzimi, all of Japan, assignors to Toyoda Gosei Co., Ltd., Haruhimura and Micro Denshi Co., Ltd., Niiza, both of, Japan

Filed Nov. 18, 1982, Ser. No. 442,668

Claims priority, application Japan, Nov. 19, 1981, 56-186046

Int. Cl.³ C08J *11/00*

U.S. Cl. 521—45 **3 Claims**



1. A method for the reclamation of vulcanized rubber by application of heat, which method is characterized by heating powdered vulcanized rubber to a temperature for desulfurization of said vulcanized rubber and, on completion of said desulfurization, quickly cooling said desulfurized rubber to a temperature of about 100° to 200° C. at which substantially no oxidation of said desulfurized rubber proceeds, wherein the step of cooling occurs at least at a rate of 10° C./min effected by means of the addition of water to said desulfurized rubber, wherein the amount of water to be added to said desulfurized rubber is limited to a level at which the added water causes no change in the weight of desulfurized rubber.

4,469,818

PROCESS FOR THE PRODUCTION OF A VOLUMINOUS, PARTICULATE VINYL CHLORIDE POLYMER

Raban Grundmann, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Sep. 7, 1982, Ser. No. 415,509

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135198

Int. Cl.³ C08F *47/08;* **C08J** *1/26*

U.S. Cl. 521—64 **11 Claims**

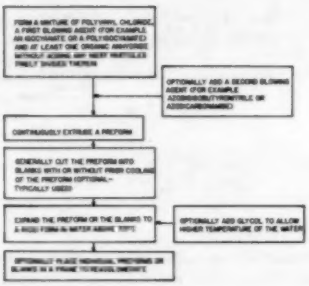
1. A process for preparing a voluminous, particulate vinyl chloride polymer comprising adding a solution of the polymer in a solvent to a heated, agitated nonsolvent for the polymer with removal of the solvent by distillation, thereby precipitating the vinyl chloride polymer, wherein the nonsolvent has a boiling point under normal pressure of > 100° C. and the temperature of the nonsolvent is 40°–120° C. above the pressure dependent boiling point of the solvent and without any reference to the pressure is equal to or greater than 100° C. and equal to or less than 180° C.

4,469,819

PROCESS FOR THE PRODUCTION OF OBJECTS MADE OF A RIGID EXPANDED MATERIAL BASED ON POLYVINYL CHLORIDE, OBJECTS OBTAINED BY SAID PROCESS, AND USES THEREFOR

Guy Lemoine; Robert Lucas, both of Le Havre, and Michel Vernon, Trilport, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France

Filed Sep. 13, 1982, Ser. No. 417,787
Claims priority, application France, Sep. 14, 1981, 81 17344
Int. Cl.³ B29D *27/00*
U.S. Cl. 521—79 **6 Claims**


FORM A MIXTURE OF POLYVINYL CHLORIDE, A FIRST BLOWING AGENT (FOR EXAMPLE, AN ISOCYANATE, OR A POLYISOCYANATE) AND AT LEAST ONE ORGANIC ANHYDRIDE WITHOUT ADDING ANY INERT PARTICLES FINELY DIVIDED THEREIN
OPTIONALLY ADD A SECOND BLOWING AGENT (FOR EXAMPLE AZODIISOBUTYRONITRILE OR AZODICARBONAMIDE)
CONTINUOUSLY EXTRUDE A PREFORM
GENERALLY CUT THE PREFORM INTO SLABS(S) WITH OR WITHOUT PRIOR COOLING OF THE PREFORM (OPTIONAL - TYPICALLY USED)
EXPAND THE PREFORM OR THE SLAB(S) TO A DESIRED DENSITY IN WATER ABOVE 70°C
OPTIONALLY ADD GLYCOL TO ALLOW HIGHER TEMPERATURE OF THE WATER
OPTIONALLY PLACE INDIVIDUAL PREFORMS OR SLABS IN A FRAME TO REDUCE SHRINKAGE

1. A process for the production of an object made of a rigid expanded material based on polyvinyl chloride comprising the following successive steps:

(a) Extruding a preform from an initial mixture prepared without the addition of any inert finely divided particles therein, said mixture comprising:

polyvinyl chloride,

at least a first blowing agent reactant capable of generating a gas when contacted with water, selected from the group consisting of the isocyanates and the polyisocyanates, and

at least one organic anhydride; and

(b) Expanding said preform in water heated to a temperature above 70° C.

6. An object produced according to the process of claim 1.

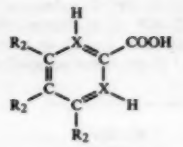
4,469,820

POLYURETHANE PREPARED FROM A POLYOXYALKYLENE CONTAINING AN OXIDATION INHIBITING AMOUNT OF A BENZOIC ACID SALT

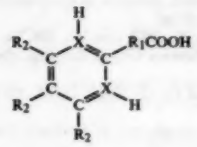
Edward M. Dexheimer, Grosse Ile; Michael J. Anchor, Canton Township, Plymouth County; Basil Thir, Grosse Ile, and Stephen E. Eisenstein, Oak Park, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 315,245, Oct. 26, 1981, Pat. No. 4,426,300.
This application Oct. 14, 1983, Ser. No. 541,883
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—125 **8 Claims**

1. A polyurethane comprising the reaction product of at least one organic polyisocyanate with an organic compound containing at least two active hydrogen atoms as determined by the Zerewitinoff Method wherein said organic compound comprises at least one polyoxyalkylene containing an effective oxidation inhibiting amount of an alkali or alkaline earth metal salt of at least one acid having the formulas:


(I)

or


(II)

wherein R_1 is selected from the group consisting of alkyl or alkenyl of up to 6 carbon atoms; R_2 is individually selected from alkyl or alkenyl groups having up to 18 carbon atoms, nitro, benzoyl, halogen, carboxy groups or OR_3 wherein R_3 is hydroxyalkyl having up to 4 carbon atoms, an alkyl or alkenyl ester group having up to 18 carbon atoms, and X is carbon.

4,469,821

LOW SMOKE, HALOHYDROCARBON-COMPATIBLE URETHANE-ISOCYANURATE FOAM COMPOSITIONS

James J. Anderson, Richmond, Va., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 17, 1983, Ser. No. 524,054
Int. Cl.³ C08G *18/14, 18/42*
U.S. Cl. 521—131 **19 Claims**

1. A composition curable by reaction with organic polyisocyanate to a polymer foam in which the predominant recurring polymer unit is isocyanurate, comprising

I. a halogenated organic blowing agent;

II. a polyester polyol mixture prepared by

(a) transesterification, with a glycol of molecular weight from about 60 to about 400, of a residue remaining after dimethyl terephthalate and methyl p-toluate have been removed from the product of oxidation of p-xylene in the preparation of dimethyl terephthalate; or

(b) esterification, with an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, and mixtures thereof, of a carboxyl functional residue resulting from the removal of terephthalic acid from the mixture obtained by the oxidation of p-xylene in the preparation of terephthalic acid; and

III. a polyether polyol having an average hydroxyl functionality of at least 4 comprising the adduct of at least 4 moles of a C_2–C_6 alkylene oxide and an organic compound selected from the group consisting of sucrose, methyl glucoside, pentaerythritol, sorbitol and mixtures thereof; said polyol mixture II containing both ethylene glycol or polyethylene glycol derivatives of said residue and sufficient higher alkylene glycol, or higher polyalkylene glycol derivatives of said residue to render said composition compatible without separation of said halogenated organic blowing agent and capable of use to prepare a foam with a Class I flame rating.

4,469,822

ALKYLENE OXIDE ADDUCTS OF VICINAL TOLUENEDIAMINE AND CO-INITIATORS, USEFUL FOR RIGID POLYURETHANE FOAMS

Theodore O. Stolz, Detroit; Richard A. Moore, and James P. Lutz, both of Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jul. 14, 1983, Ser. No. 513,723
Int. Cl.³ C08G *18/14, 18/50;* C09K *3/00*
U.S. Cl. 521—167 **33 Claims**

1. A polyol composition comprising the reaction product of an alkylene oxide and a mixture of initiators comprising vicinal toluenediamine and a co-initiator selected from the group consisting of glycerin, pentaerythritol, sucrose, sorbitol, trimethylolpropane, and mixtures thereof.

12. A process for preparing a polyol composition comprising reacting an alkylene oxide and a mixture of initiators comprising vicinal toluenediamine and a co-initiator selected from the group consisting of glycerin, pentaerythritol, sucrose, sorbitol, trimethylolpropane, and mixtures thereof.

4,469,823

FLEXIBLE POLYURETHANE FOAMS MADE USING AN AROMATIC POLYESTER POLYOL

Ernest L. Yeakey; Robert L. Zimmerman, and Michael E. Brennan, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 28, 1983, Ser. No. 518,171
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—172 **10 Claims**

1. A method for producing a flexible polyurethane foam comprising reacting in the presence of a polyurethane catalyst an organic polyisocyanate and a polyol blend having an average hydroxyl number in the range from about 25 to 100 where the polyol blend comprises

a. from about 90 to 99.5 wt.% of a polyester polyol or polyether polyol and

b. from about 0.5 to 10 wt.% of an aromatic polyester polyol which is the reaction product from

(1) esterifying, in the absence of a catalyst, a residue from dibasic acid manufacture with an alkylene glycol to produce a polyester polyol intermediate, and

(2) transesterifying, in the absence of a catalyst, recycled polyethylene terephthalate with the polyester polyol intermediate of the previous step.

4,469,824

LIQUID TEREPHTHALIC ESTER POLYOLS AND POLYISOCYANURATE FOAMS THEREFROM

Robert A. Grigsby, Jr., Georgetown; George P. Speranza, and Michael E. Brennan, both of Austin, all of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Nov. 18, 1983, Ser. No. 553,272
Int. Cl.³ C08G *18/14, 18/00*
U.S. Cl. 521—173 **17 Claims**

1. A mixture of liquid terephthalic ester polyols produced by the process comprising

a. reacting recycled polyethylene terephthalate with diethylene glycol and at least one more oxyalkylene glycol, where the mole ratio of glycols to recycled polyethylene terephthalate is greater than 1.2:1, and

b. stripping off as overhead at least 5 wt.% of the reaction product from step a. based on the reactants charged, where at least 25% of the overhead is ethylene glycol, to give a mixture of esters which is free from solids upon standing.

11. A process for the production of a mixture of liquid terephthalic ester polyols comprising

a. reacting recycled polyethylene terephthalate with diethylene glycol and at least one more oxyalkylene glycol, where the mole ratio of glycols to recycled polyethylene terephthalate is greater than 1.2:1, and

b. stripping off as overhead at least 5 wt.% of the reaction product from step a. based on the reactants charged, where at least 25 wt.% of the overhead is ethylene glycol, to give a mixture of esters which is free from solids upon standing.

4,469,825

SEQUENTIAL HETEROPOLYMER DISPERSION AND A PARTICULATE MATERIAL OBTAINABLE THEREFROM, USEFUL IN COATING COMPOSITIONS AS AN OPACIFYING AGENT

Alexander Kowalski, Plymouth Meeting, and Martin Vogel, Jenkintown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 9, 1983, Ser. No. 473,507
Int. Cl.³ C08L *0/00*
U.S. Cl. 523—201 **12 Claims**

1. A process for making an aqueous dispersion of water-insoluble core/sheath polymer particles comprising sequentially emulsion polymerizing at a temperature of from about 10° C. to about 100° C. in an aqueous medium containing a free radical initiator:

(a) a core monomer system comprising one or more monoethylenically unsaturated monomers at least one of which monomers having an amine group and comprising at least 5% by weight of the core monomer system, thereby forming dispersed core particles having an average diameter of from about 0.05 to 1 micron, and

(b) polymerizing in the presence of the dispersed core particles a sheath monomer system comprising at least one monoethylenically unsaturated monomer having no ionizable group to form a sheath on the core particles, any monoethylenically unsaturated amine in the sheath monomer mixture being present in an amount of no more than 10% by weight of the sheath monomers, the proportion of amine in the sheath monomer mixture being less than ½ the proportion thereof in the core monomer mixture, the resultant core-sheath particles having an average diameter before acidification and swelling of from about 0.07 to 4.5 microns, the relative amounts of core-forming monomer(s) and sheath forming monomer(s) being such that the ratio of the weight of the core to the weight of the total polymer in the resulting dispersed particles is from about 1:4 to 1:100, said sheath being permeable to an aqueous acid and having a T_i of greater than 50° C., and

(c) neutralizing with acid so as to swell said core and form particles which, when dried, contain a single void and cause opacity in compositions in which they are contained.

8. A composition comprising an aqueous dispersion of water-insoluble core/sheath polymer particles have an average diameter of 0.07 to 4.5 microns, having a core polymerized from a monomer system comprising one or more monoethylenically unsaturated monomers, at least one of said unsaturated monomers having an amine group, and having at least one sheath polymerized from at least one different sheath monomer system, at least one of said different sheath monomer systems being hard and producing a sheath polymer having a T_i greater than 50° C., being non film-forming at 20° C., and being permeable to acid, said core being swollen by neutralization with acid in the presence of water, said particles having a property such that when subsequently dried a single cavity forms in said core and said particles cause opacity in compositions in which they are contained.

12. Articles coated and/or impregnated with the opaque film-forming composition of claim 1.

4,469,826

PROCESS FOR THE PRODUCTION OF DISPERSIONS OF POLYMERS IN NON-AQUEOUS VEHICLES

Daniel J. Carlick, Livingston, and Olgierd Wasilewski, Edison, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,556
Int. Cl.³ C09D *11/02, 11/08, 11/10*
U.S. Cl. 523—339 **16 Claims**

1. In a process for the production of dispersions of finely-divided polymer particles in non-aqueous vehicles wherein an aqueous latex containing about 5 percent to 60 percent by weight of a thermoplastic polymer is coagulated, a non-aqueous vehicle is added to the coagulated latex, the mixture of coagulated latex and vehicle is agitated until a water phase separates, and the water phase is separated from the dispersion of polymer in the non-aqueous vehicle, the improvement wherein the aqueous latex is coagulated by adding to it a coagulating agent that consists of alum and a fatty alcohol having 10 to 14 carbon atoms in the amount of about 1 part to 10 parts by weight of alcohol per part by weight of alum, said dispersions of finely-divided polymer particles in non-aqueous vehicles being suitable for use in lithographic printing inks.

4,469,827

MIXTURES OF POLYMERS FOR MEDICAL USE

Christian Pusineri, Serezin du Rhone, and Jean Goletto, Ecully, both of France, assignors to Hospal-Sodip SA, Meyzieu, France

Division of Ser. No. 489,707, Apr. 29, 1983, Pat. No. 4,433,072, which is a division of Ser. No. 417,323, Sep. 13, 1982, Pat. No. 4,394,462, which is a division of Ser. No. 103,894, Dec. 17, 1979, Pat. No. 4,408,026. This application Dec. 28, 1983, Ser. No. 566,331
Int. Cl.³ C08L *5/00*
U.S. Cl. 524—27 **5 Claims**

1. Shaped articles, useful in the medical field, characterized in that they totally or partially consist of polymer compositions consisting of a mixture of vinyl chloride polymer and a polyether-urethane with tertiary amine and/or ammonium groups and heparin, with the proportion of the polyether-urethane being from 1-99% by weight, relative to the total mixture.

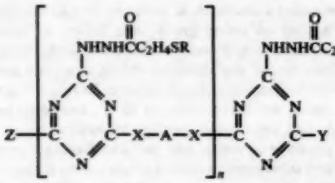
4,469,828

ALKYLTHIOPROPIONYL HYDRAZINO TRIAZINES AND SYNTHETIC RESIN COMPOSITIONS

Motonobu Minagawa, Koshigaya; Tohru Haruna, Okegawa, and Masayuki Takahashi, Tokorozawa, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Nov. 22, 1982, Ser. No. 443,363
Int. Cl.³ C07D *251/00, 251/18, 403/00;* **C08K** *5/34*
U.S. Cl. 524—100 **24 Claims**

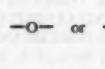
1. Alkyl thiopropionyl hydrazino triazines having the formula:



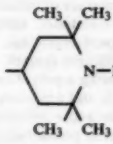
wherein:

R is alkyl having from one to about fifty carbon atoms;

X is



where R_1 is selected from the group consisting of hydrogen, alkyl having from one to about fifty carbon atoms; and

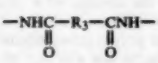


where R_2 is selected from the group consisting of hydrogen, O and alkyl hydroxyalkyl, epoxy alkyl and acyloxy alkyl having from one or two to about eight carbon atoms;

when X is O, A is selected from the group consisting of alkylene having from two to about twenty carbon atoms, cycloalkylene having from about five to about eight carbon atoms and phenylene;

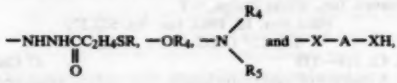
when X is

A is selected from the group consisting of a direct linkage, alkylene having from one to about twenty carbon atoms, cycloalkylene having from five to about eight carbon atoms; phenylene; and

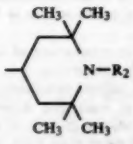


where R_3 is selected from the group consisting of a direct linkage, alkylene having from one to about twenty carbon atoms; cycloalkylene having from about five to about eight carbon atoms; phenylene; and thiodialkylene having from about two to about twenty carbon atoms;

Y and Z are each selected from the group consisting of



where R_4 and R_5 each are selected from the group consisting of hydrogen; alkyl having from one to about fifty carbon atoms, cycloalkyl having from about five to about eight carbon atoms; phenyl; and alkyl phenyl having from seven to about twenty carbon atoms; and



n is a number from 0 to about 20.

4,469,829

AMINO-GROUP BEARING, LOW MOLECULAR WEIGHT 1,3-BUTADIENE POLYMER FOR STABILIZING PLASTICS

Alfred Konietzny, Marl; Hans-Dieter Zagefka, Haltern; Konrad Rombusch, and Hanns-Jörg Bax, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

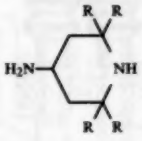
Filed Aug. 18, 1983, Ser. No. 524,360

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233949

Int. Cl.³ C08K *5/34, 5/51;* **C08G** *59/50;* **C07D** *211/00*

U.S. Cl. 524—103 **12 Claims**

1. Light stabilized plastics comprising about 0.01 to 2 percent by weight based on the weight of said plastics of a stabilizer comprising an amino group bearing 1,3-butadiene polymer prepared by reacting an epoxidized polybutadiene having an epoxy oxygen content of about 2 to 10% by weight with a substituted piperidine having the general formula



to form a reaction product where R represents similar or different alkyl groups having 1 to 3 carbon atoms, and said reaction product has a content of 0.3 m tetraalkylpiperidine/100 g of said reaction product, where said epoxidized polybutadiene is prepared from a basic polybutadiene having a molecular weight ($\overline{Mn}$) between 500 and 6,000, an iodine number greater than about 200, and a trans structure having a double bond content of not more than about 40%.

4,469,830

PROCESS FOR INCREASING THE OZONE-RESISTANCE OF A RUBBER

Dieter W. Brück, Cologne; Werner Jeblick, Leverkusen, and Lothar Ruetz, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

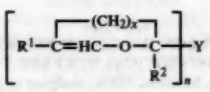
Filed Jul. 22, 1983, Ser. No. 515,878

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228861

Int. Cl.³ C08K *5/06, 5/15*

U.S. Cl. 524—109 **3 Claims**

1. Process for increasing the ozone-resistance of a natural and synthetic rubber which comprises incorporating therein an enol ether of the formula



in which

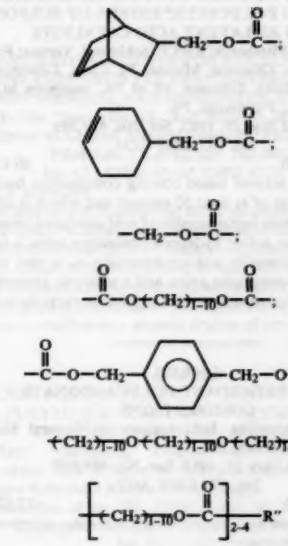
R^1 and R^2 may be the same or different and represent hydrogen, straight-chain or branched C_1–C_{10}-alkyl, in addition to which

R^2 may also represent an aldehyde group or a valence to Y,

X=1 or 2,

n=1 to 4, and

Y represents a group of the formula



where R″ represents a C_1–C_{10}-alkylene, C_2–C_{10}-alkenylene, phenylene or cyclohexylene.

4,469,831

MOISTURE-CURING, STORAGE STABLE, SINGLE-COMPONENT POLYURETHANE SYSTEMS

Uwe Bueltjer, Ludwigshafen; Heinrich Horacek, Frankenthal; Wolfgang Druschke, Dirmstein; Gernot Franzmann, Bobenheim; Erhard Klahr, Ludwigshafen, and Hans-Juergen Foerster, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 411,541, Aug. 25, 1982, abandoned. This application Apr. 28, 1983, Ser. No. 489,538

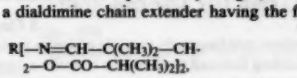
Int. Cl.³ C08G *18/16, 18/38;* **C08K** *5/15, 3/26*

U.S. Cl. 524—112 **10 Claims**

1. Moisture-curing, storage stable, single-component polyurethane composition comprising:

A. a polyurethane prepolymer having a free isocyanate content of 1 to 5 percent by weight;

B. a dialdimine chain extender having the formula



in which

R is a divalent aliphatic radical with 2 to 10 carbon atoms, aliphatic radical having 4 to 10 carbon atoms and containing ether oxygen and/or lower alkylamino nitrogen atoms, cycloaliphatic radical with 6 to 15 carbon atoms, or

aromatic radical with 6 to 21 carbon atoms;

and

C. an acid catalyst selected from the group consisting of aliphatic carboxylic acids, aromatic carboxylic acids, toluenesulfonic acid, and mixtures thereof.

4,469,832

AMINOPLAST CURABLE COATING COMPOSITIONS CONTAINING POLYCYCLIC ESTERS OF SULFONIC ACIDS AS LATENT ACID CATALYSTS

Debra L. Singer, Pittsburgh; Karl F. Schimmel, Verona; Rostyslaw Dowbenko, Gibsonia; Michael M. Chau, Gibsonia, and Wen-Hsuan Chang, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 29, 1982, Ser. No. 427,399
Int. Cl.³ C08F 3/36
U.S. Cl. 524—160 20 Claims

1. An organic solvent based coating composition having a total solids content of at least 50 percent and which is sprayable, said composition being capable of acid catalyzed crosslinking, comprising an active hydrogen-containing resin, a curing agent present externally and/or internally as a part of the active hydrogen-containing resin, and a catalytic amount of a non-ionic, saturated or unsaturated organic polycyclic ester of a sulfonic acid.

4,469,833

FLAME RETARDANT POLYCARBONATE COMPOSITIONS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed May 27, 1983, Ser. No. 498,945
Int. Cl.³ C08K 5/42
U.S. Cl. 524—161 27 Claims

1. A flame-retardant copolyester-carbonate composition containing, in admixture:

(i) at least one halogen-free and sulfur-containing aromatic copolyester-carbonate resin derived from

(a) at least one halogen-free and sulfur-free non-polycyclic dihydric phenol,

(b) from about 4 to about 25 mole percent of at least one halogen-free thiodiphenol, based on the total amount of said halogen-free and sulfur-free non-polycyclic dihydric phenol and said halogen-free thiodiphenol employed,

(c) at least one difunctional carboxylic acid or a reactive derivative thereof, and

(d) a carbonate precursor; and

(ii) an amount of at least one organic metal salt of sulfonic acid selected from alkali and alkaline earth metal salts of sulfonic acids which in combination with said thiodiphenol is effective to render said composition flame retardant.

4,469,834

POLY(BUTYLENE TEREPHTHALATE) BASED MOLDING RESINS

Wilfred L. Shearer, Mountainside; Stephen M. Sinker, Lebanon, and Richard A. Wolf, Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed May 11, 1983, Ser. No. 493,455
Int. Cl.³ C08K 5/13, 5/24; C08L 67/02
U.S. Cl. 524—193 8 Claims

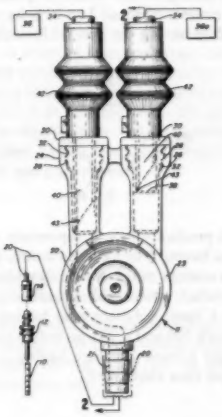
1. A flame retardant molding resin capable of being molded into an article exhibiting reduced tendency to corrode a copper surface when the molded resin and the copper surface are placed in spaced relationship in a common unventilated atmosphere at elevated temperatures, as measured by the Bell Telephone Laboratories Copper Corrosion Test at temperaures within the range of from 150° to 175° C., wherein the molding resin comprises the combination of (a) a poly(butylene terephthalate) polymer and (b) a flame retardant comprising aromatic halogen groups in a flame retardant amount, and (c) an alkylhydroxyphenylalkanoyl-hydrazine in an amount that is within the range of from 0.05 to 0.6% by weight, based on the weight of the molding resin, and less than 0.8% by weight based on the polymer; and wherein the molding resin has a life of at least 168 hours at 150° C. as measured by the Bell test based on 4 samples.

4,469,835

CONNECTOR MEMBER ADAPTED FOR ULTRAVIOLET ANTIMICROBIAL IRRADIATION

Dean G. Laurin, Lake Zurich, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 5, 1981, Ser. No. 270,742
Int. Cl.³ C08K 5/00; G01N 21/00; A61L 22/00; C08G 18/28
U.S. Cl. 524—349 36 Claims



1. A connector member communicating with flow tubing and adapted for sealed, aseptic connection with a second connector member to permit the sealed flow of material through the joined connector members, said connector member being made of a material selected from the group consisting of aliphatic hydrocarbon resins, aliphatic polyester resins, copolymers of olefins and vinyl acetate, olefin-acrylate copolymers, and chlorinated aliphatic hydrocarbon resins, said material containing an effective amount of an antioxidant agent dispersed therein, said antioxidant agent being selected to provide to the material the characteristic of permitting transmissions of at least 15 percent of at least one wavelength of ultraviolet radiation having a wavelength between 220 and 300 nanometers through a thickness of 0.003 inch of the material.

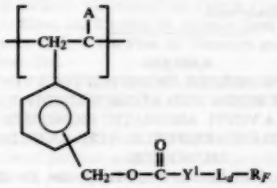
4,469,836

PERFLUOROCARBON BASED POLYMERIC COATINGS HAVING LOW CRITICAL SURFACE TENSIONS

Donald L. Schmidt, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

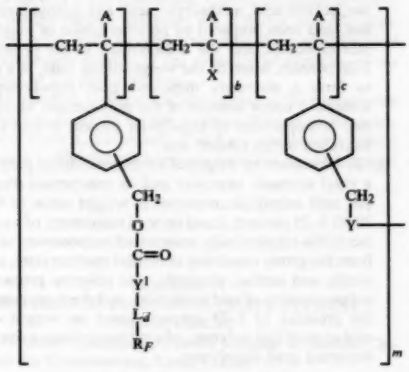
Filed Oct. 4, 1983, Ser. No. 538,888
Int. Cl.³ C08F 8/18, 8/34, 214/14, 114/14
U.S. Cl. 524—376 12 Claims

1. An adherent coating composition comprising a polymer containing a pendant benzyl portion linked through a benzyl ester linkage containing a hydrocarbon moiety containing at least two carbon atoms to a perfluorocarbon moiety having a perfluoroalkyl group, represented by the formula:



wherein A is hydrogen or methyl, Y^1 is a hydrocarbon moiety containing at least 2 carbon atoms, L is a non-interfering radical, d is 0 or 1, and R_F is a saturated perfluoroaliphatic moiety, and wherein the coating exhibits a critical surface tension of wetting of less than about 15 dynes/cm.

2. An adherent coating composition of claim 1 represented by the formula



wherein $a+b+c=1$, a is greater than 0, b is from about 0 to about 0.9, c is from 0 to about 0.8, m is from about 100 to about 10,000, X is an essentially nonionic moiety and Y is the remaining portion of a polycarboxylic acid and is present in such a way that crosslinking is introduced to the polymer system.

6. A composition comprising a polyvinylbenzyl sulfonium containing polymer, a nucleophilic fluoroalkyl-containing carboxylic acid, and a suitable solvent, such that when cured, said composition yields an adherent coating composition of claim 1.

8. A composition of claim 6 wherein said suitable solvent is diethylene glycol methyl ether, or a mixture of diethylene glycol methyl ether and propylene glycol methyl ether.

4,469,837

POLYVINYL-ALCOHOL-BASED THERMOPLASTIC COMPOSITION

Pietro Cattaneo, Via Simone d'Orsenigo 18, Milan, Italy

Filed Nov. 1, 1982, Ser. No. 438,525

Claims priority, application Italy, Oct. 30, 1981, 24798 A/81

Int. Cl.³ C08K *5/05*

U.S. Cl. 524—388 **9 Claims**

1. A thermostatic composition based on polyvinyl alcohol and adapted to be subjected as such to the conventional hot shaping procedure for thermoplastic materials, such as molding and extrusion for the production of articles, characterized in that it is composed of a dry mixture of said polyvinyl alcohol containing originally absorbed moisture and one or more solid monomeric polyhydroxylated alcohols which, as such or in mutual admixture, exhibit the main melting point peak as determined by differential thermal analysis (DTA) comprised between 160° C. and 230° C.

4,469,838

NUCLEATING AGENTS FOR POLYCARBONATE RESINS PREPARED VIA TRANSESTERIFICATION OF BISPHENOL-A AND DIPHENYL CARBONATE

Ping Y. Liu, Naperville, Ill., and Allen W. Ko, Lenox, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 17, 1982, Ser. No. 349,603

Int. Cl.³ C08G *63/62;* **C08K** *3/22, 5/09*

U.S. Cl. 524—394 **7 Claims**

1. A method for controlling the crystallization and enhancing the optical transparency of a polycarbonate resin prepared by the transesterification of a diaryl carbonate and a dihydric phenol which comprises adding to said polycarbonate resin a minor effective amount of a nucleating agent consisting essentially of lithium hydroxide or lithium stearate, and allowing the resin to crystallize to a desired degree of crystallinity.

4,469,839

PROCESS FOR PREPARING AN AQUEOUS EMULSION OF A POLYMER BY EMULSION POLYMERIZATION IN THE PRESENCE OF AN EMULSIFIER

Motokazu Maruhashi, Kusatsu, and Sumio Nakagawa, Hirakata, both of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 275,025, Jun. 18, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,193

Int. Cl.³ C08F *2/26*

U.S. Cl. 524—458 **6 Claims**

1. In a process for preparing an aqueous emulsion of a polymer comprising units of at least one ethylenically unsaturated monomer by emulsion polymerization in the presence of an emulsifier in an aqueous medium, the improvement which comprises employing as an emulsifier a copolymer of (1) a monomer of a vinyl ester of a carboxylic acid and (2) a sulfo group-containing monomer of the following general formula:

$$CH_2{=}CR^1{-}CO{-}A{-}R^2{-}SO_3M$$

wherein R^1 is hydrogen or methyl group, R^2 is an alkylene group, M is hydrogen or an alkali metal, and A is —NR— in which R is hydrogen, an alkyl group or $-R^2SO_3M$, to give an aqueous emulsion having a high viscosity, said monomer (2) being present in an amount of from 1 to 20% by mole based on the total amount of monomers (1) and (2).

4,469,840

AQUEOUS POLYSILOXANE FORMULATIONS

Heinrich Alberts, Cologne, and Helmut Steinberger, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,590

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1981, 3151924

Int. Cl.³ C08F *283/06, 283/12*

U.S. Cl. 524—500 **5 Claims**

1. An aqueous emulsion by weight comprising approximately

(a) 22 to 99.899% of water,

(b) 0.01 to 18% of an emulsifier, and

(c) 0.1 to 60% of a composition produced by polymerizing at a temperature from about room temperature to 250° C. a composition by weight comprising approximately

(i) 10 to 90% organopolysiloxane,

(ii) 4.999 to 85% of at least one of a surfactant and a water-soluble polyether.

(iii) 85-5% of at least one polymerizable vinyl monomer, and

(iv) 0.001 to 2% of a radical forming polymerization catalyst.

whereby the vinyl monomer is polymerized and forms polymer bridges between (i) and (ii).

4,469,841

LATENT ACID CATALYST FOR WATERBORNE COATINGS

Donald J. Hart, Sterling Heights, and Robert A. Ottaviani, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 4, 1983, Ser. No. 472,235
Int. Cl.³ C08K 5/43; C08L 33/14
U.S. Cl. 524—512 **2 Claims**

1. An acrylic water dispersible paint binder resin composition storable at normal ambient conditions, but curable by acid catalysts at paint bake temperature of the order of about 121° C. or higher, said composition comprising a melamine compound containing alkoxy groups for crosslinking and self-condensation, an acrylic copolymer resin containing carboxylic acid groups for water dispersibility and pendant hydroxy groups for crosslinking with said melamine compound and a N,N-lower dialkyl, lower alkyl sulfamate ester nonreactive at paint storage temperatures but reactive at a said paint bake temperature to generate acid curing catalyst.

2. A storable acrylic water base paint curable by acid catalysis at paint film bake temperatures of the order of about 121° C. or higher, comprising an acrylic copolymer resin containing carboxylic acid groups for water dispersibility and pendant hydroxy groups for crosslinking, a melamine compound containing alkoxy groups for self-condensation and for crosslinking with said acrylic resin and ethyl N,N-dimethylsulfamate.

4,469,842

ISOCYANATE-COUPLED REINFORCED OXYMETHYLENE POLYMERS USING IMPROVED CATALYST SYSTEM

Gina R. Kritchevsky, Scotch Plains, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,178
Int. Cl.³ C08K 3/40
U.S. Cl. 524—593 **15 Claims**

1. A molding composition comprised of an oxymethylene polymer having at least 60 percent of recurring oxymethylene units, an isocyanate compound in an amount ranging from about 0.25 to 1.5 percent by weight based on the weight of the polymer, a reinforcing agent in the form of glass fibers and a catalyst in an amount ranging from about 0.15 to 2.5 percent by weight based on the weight of the isocyanate, said catalyst comprised of an admixture of dibutyl tin dilaurate and at least one alkyl dimethyl benzyl ammonium saccharinate wherein said alkyl is selected from the group consisting of C_{12}–C_{18} and mixtures thereof, with said dibutyl tin dilaurate and said at least one alkyl dimethyl benzyl ammonium saccharinate being present in a weight ratio ranging from about 0.1:1 to 1:1, respectively.

4,469,843

MOLDING COMPOSITION COMPRISING MODIFIED STYRENE-MALEIC ANHYDRIDE COPOLYMER AND POLYCARBONATE

Frank E. Lordi, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 19, 1982, Ser. No. 379,700
Int. Cl.³ C08L 69/00
U.S. Cl. 525—67 **19 Claims**

1. A thermoplastic molding composition comprising an intimate admixture of:

(a) the polymerization product of an α,β unsaturated cyclic anhydride, a vinyl aromatic monomer, a rubber which is a conjugated diene-styrenic copolymer containing 65 weight percent or more conjugated diene, and a vinyl aromatic monomer-conjugated diene copolymer containing from about 10 to about 60 weight percent conjugated diene; and,

(b) a polycarbonate resin.

4,469,844

BLENDS OF A RUBBER-MODIFIED POLYVINYL CHLORIDE RESIN AND RUBBER-MODIFIED POLYMER OF A VINYL AROMATIC MONOMER AND UNSATURATED DICARBOXYLIC ACID ANHYDRIDE MONOMER

Kenneth W. Doak, 3469 Burnett Dr., Murrysville, Pa. 15668

Filed May 16, 1983, Ser. No. 494,708
Int. Cl.³ C08L 51/04, 53/00
U.S. Cl. 525—71 **24 Claims**

1. A polyblend composition comprising:

(a) 80–20 percent by weight of a rubber-modified vinyl chloride resin, containing 0–20 percent, based on total monomers, of a copolymerizable, ethylenically unsaturated comonomer, selected from the group consisting of ethylene, propylene, an alpha-olefin containing 4–8 carbon atoms, vinyl acetate, vinylidene chloride, alkyl acrylate, acrylic acid, methacrylic acid, and methyl methacrylate, said resin prepared by polymerization of vinyl chloride monomer, and the comonomer, in the presence of 2–20 percent, based on the weight of the resin, of a rubber to form a discretely dispersed graft copolymer, and wherein a major amount of the polymerized vinyl chloride homopolymer or copolymer present in said resin is ungrafted to the rubber; and

(b) 20–80 percent by weight of a rubber-modified polymer of a vinyl aromatic monomer and an unsaturated dicarboxylic acid anhydride monomer in weight ratios of 95:5 to 70:30, 0–25 percent, based on total monomers, of a copolymerizable ethylenically unsaturated termonomer, selected from the group consisting of methyl methacrylate, acrylonitrile, and methacrylonitrile, said polymer prepared by polymerization of said monomers, and the termonomer, in the presence of 5–25 percent, based on weight of the rubber-modified polymer, of a rubber to form a discretely dispersed graft copolymer.

4,469,845

BLENDS OF A RUBBER-MODIFIED POLYVINYL CHLORIDE RESIN AND A POLYMER OF A VINYL AROMATIC MONOMER AND UNSATURATED DICARBOXYLIC ACID ANHYDRIDE MONOMER

Kenneth W. Doak, 3469 Burnett Dr., Murrysville, Pa. 15668

Filed May 16, 1983, Ser. No. 494,709
Int. Cl.³ C08L 51/04, 53/00
U.S. Cl. 525—71 **21 Claims**

1. A polyblend composition comprising:

(a) 80–20 percent by weight of a rubber-modified vinyl chloride resin, containing 0–20 percent, based on total monomers, of a copolymerizable, ethylenically unsaturated comonomer, selected from the group consisting of ethylene, propylene, an alpha-olefin containing 4–8 carbon atoms, vinyl acetate, vinylidene chloride, alkyl acrylate, acrylic acid, methacrylic acid, and methyl methacrylate, said resin prepared by polymerization of vinyl chloride monomer and the comonomer, in the presence of 2–20 percent, based on the weight of the resin, of a rubber to form a discretely dispersed graft copolymer, and wherein a major amount of the polymerized vinyl chloride homopolymer or copolymer present in said resin is ungrafted to the rubber; and

(b) 20–80 percent by weight of a polymer consisting essentially of a vinyl aromatic monomer and an unsaturated dicarboxylic acid anhydride monomer in weight ratios of 95:5 to 70:30, and 0–25 percent, based on total monomers, of a copolymerizable, ethylenically unsaturated termonomer, selected from the group consisting of methyl methacrylate, acrylonitrile, and methacrylonitrile.

4,469,846

CORE/SHELL FLUOROPOLYMER COMPOSITIONS

Ausat A. Khan, and Charles W. Stewart, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 20, 1983, Ser. No. 496,537
Int. Cl.³ C08F *259/08*; C08L *51/06*
U.S. Cl. 525—72 18 Claims

1. A particulate polymeric composition consisting of a plastic portion of polymer selected from homopolymers of tetrafluoroethylene, vinylidene fluoride, and chlorotrifluoroethylene and copolymers of one of the above monomers with up to 3%, based on the copolymer weight, of another comonomer, said other comonomer being selected from the group consisting of perfluoroolefins, perfluoroethers, fluoroolefins, perfluorodioxoles, and olefins; the number average molecular weight of the plastic portion of polymer being at least 250,000, and the size of the plastic portion being about 0.01–0.4 μm;

and an elastomeric portion of a copolymer of a fluoromonomer with at least one other comonomer; the weight ratio of the plastic portion to the elastomeric portion being about 95:5 to 5:95, and the particle size being about 0.05–1 μm; said composition being made by copolymerizing the comonomers of the elastomeric portion in the presence of particles of the polymer of the plastic portion.

10. An uncured composition comprising a fluoroelastomer matrix having dispersed therein a compatible particulate composition of claim 1, the amount of said particulate composition being about 2–50% based on the weight of the fluoroelastomer matrix.

4,469,847

PROCESS FOR PREPARING GRAFT STYRENE COPOLYMERS

Robert Roussel, Mazingarge, France, assignor to Societe Chimiques des Charbonnages, Paris, France

Filed Feb. 9, 1983, Ser. No. 465,143
Claims priority, application France, Feb. 10, 1982, 82 02138
Int. Cl.³ C08L *51/04, 51/06, 53/00, 53/02*
U.S. Cl. 525—89 8 Claims

1. A process for producing a graft styrene copolymer having a fine microstructure, good impact resistance and good resistance to aging, said process comprising the steps of:

(a) effecting a prepolymerization of styrene in the presence of an elastomeric EPDM terpolymer, and styrene block copolymer, at a temperature not exceeding 100° C., until polymerization is about 20–30% complete; wherein the amount of EPDM terpolymer is at most 20% by weight relative to the total weight of the organic phase, and the amount of styrene block copolymer is 5–30% by weight relative to the weight of the EPDM terpolymer; wherein the viscosity of the EPDM terpolymer is 30–100 centipoises, expressed as the viscosity of a solution of 5 weight parts of EPDM terpolymer in 95 weight parts of styrene at 20° C.; wherein said styrene block copolymer has a weight average molecular weight of 60,000–300,000, being a styrene/butadiene block copolymer or a mixture of styrene/butadiene block copolymer and styrene/ethylene block copolymer, the weight ratio of styrene/butadiene to styrene/ethylene copolymer being at least 1:1; and wherein not more than 45% of water is present during the prepolymerization stage; and

(b) completing the polymerization by effecting a suspension polymerization of the resultant mixture from step (a), at a temperature of 90°–150° C., in the presence of an amount of water such that the weight ratio organic phase:water phase is from 0.8:1 to 1.3:1, and recovering the resultant graft copolymer.

4,469,848

DEODORANT PRODUCT FOR SURFACE TREATMENT

David C. Hooper, Ashford; George A. Johnson, Wirral; Donald Peter, Wirral, and George K. Rennie, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 38,981, May 14, 1979, Pat. No. 4,347,153.
This application Feb. 12, 1982, Ser. No. 353,313
Claims priority, application United Kingdom, May 16, 1978, 19844/78
Int. Cl.³ C11D *3/50, 7/22*
U.S. Cl. 252—106 17 Claims

1. A deodorant product suitable for application to surfaces other than human skin, which product comprises:

(i) from 1 to 99.9% by weight of a carrier selected from the group consisting of polishing agents and film forming polymers; and

(ii) from 0.1 to 20% by weight of a deodorant composition comprising from 45 to 100% by weight of deodorant active components, said components have a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances
Class 2: essential oils, extracts, resins and synthetic oils
Class 3: aldehydes and ketones
Class 4: polycyclic compounds
Class 5: esters
Class 6: alcohols

provided that where a component can be classified into more than one class, it is placed in the lower or lowest numbered class; said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of Class 1, Class 2 and Class 4;

(b) the deodorant composition contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b);

the deodorant composition having a deodorant value of from 0.50 to 3.5 as measured by the Deodorant Value Test.

4,469,849

METHOD FOR THE HYDROGENATION OF EMULSIFIED UNSATURATED ORGANIC COMPOUNDS

Barry A. Murrer, Henley on Thames, and John W. Jenkins, Chalkhouse Green Near Reading, both of England, assignors to Johnson Matthey & Co., Limited, London, England

Continuation of Ser. No. 235,856, Feb. 19, 1981, abandoned.
This application Feb. 18, 1983, Ser. No. 467,920
Claims priority, application United Kingdom, Feb. 25, 1980, 8006235
Int. Cl.³ C08F *8/04*
U.S. Cl. 525—339 4 Claims

1. In a process for the hydrogenation of an ABS polymer by treatment with hydrogen in the presence of a catalyst, the improvement comprising contacting the polymer in the form of an emulsion with gaseous or dissolved hydrogen in the presence of a hydrogen catalyst selected from the group consisting of tris (triphenylphosphine, rhodium chloride [$(Ph_3P)_3RhCl$)], bis (triphenylphosphine) rhodium cycloocta-1,5-diene tetra-fluoroborate [$(Ph_3P)_2$ Rh cod]$^+$[BF_4]$^-$, Rh HCO (PPh_3)$_3$ and RhHCO(PPh_3)$_2$, the said catalyst being dissolved in a liquid which is substantially immiscible in the liquid forming the emulsion of the copolymer and which is adapted to act as a swelling agent for the copolymer thereby to increase the accessibility of the copolymer double bonds to the catalyst allowing the hydrogen process to proceed to completion, allowing the reaction mixture to separate into a two layer liquid system without the addition of any reagent, one layer comprising the solution of the catalyst and the other layer comprising an emulsion of the hydrogenated copolymer and, thereafter, removing at least one of the two layers of the said

two layer liquid system and treating the material of that layer which contains the hydrogenated ABS polymer with an alcohol so as to coagulate the hydrogenated ABS copolymer and thereby to facilitate its removal from the liquid.

4,469,850

COMPOSITIONS

Edward L. Belfoure, New Harmony, and Kenneth F. Miller, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Nov. 5, 1982, Ser. No. 439,575
Int. Cl.³ C08L 67/02, 69/00
U.S. Cl. 525—439 **10 Claims**

1. A composition comprising an intimate admixture of
a. a halogen free, unbranched aromatic polycarbonate derived from a dihydric phenol and a carbonate precursor, having an intrinsic viscosity of at least about 0.60 dl/g in methylene chloride at 25° C., and
b. a halogen free unbranched aromatic copolyester carbonate derived from a dihydric phenol, a carbonate precursor, and an aromatic dicarboxylic acid or reactive derivative thereof selected from the group consisting of terephthalic acid or a mixture of isophthalic and terephthalic acid;
said aromatic polycarbonate and aromatic copolyester carbonate present in such quantities that the ¼ inch notched Izod impact strength of the composition is higher than that of component a alone or component b alone and the ¼ inch notched Izod impact test failure mode is substantially ductile.

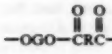
4,469,851

MOLDING COMPOSITION

John J. Charles, Nesbanic Station, and Suzanne B. Nelsen, Bergenfield, both of N.J., assignors to GAF Corporation, Wayne, N.J.

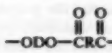
Filed Jun. 6, 1983, Ser. No. 501,672
Int. Cl.³ C08L 67/02, 67/06
U.S. Cl. 525—444 **11 Claims**

1. Molding composition comprising a blend of:
a. between about 5 and about 95 wt % polybutylene terephthalate; and
b. between about 95 and about 5 wt % segmented thermoplastic copolyester elastomer which consists essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain ester units being represented by the formula



Formula I

and said short chain ester units being represented by the formula



Formula II

where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a number average molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4 butanediol or 1,4 butenediol; provided:
(i) said short chain segments amount to between about 30% and about 85% of the copolyester; and
(ii) between about 10% and about 40% of the D groups represent divalent radicals remaining after removal of hydroxyl groups from 1,4 butenediol.

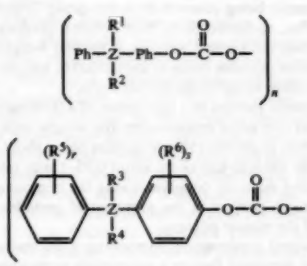
4,469,852

COMPOSITION COMPRISING GRAFT POLYCARBONATES

John A. Tyrell; Omar M. Boutni, and Gary L. Freimiller, all of Mt. Vernon, Ind., assignors to General Electric Company, Mt. Vernon, Ind.

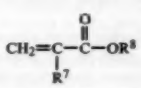
Filed Jun. 15, 1983, Ser. No. 504,442
Int. Cl.³ C08L 69/00; C08F 283/02
U.S. Cl. 525—468 **9 Claims**

1. A composition which comprises an aromatic polycarbonate in admixture with an impact improving effective amount of a resin that has units of the formulas:



wherein R^1, R^2, R^3 and R^4 are the same or different and are hydrogen or (lower) alkyl or phenyl; R_5 and R_6 are (lower) alkenyl; Ph is phenyl; n is at least 30 and m is at least 1; r and s are 0, 1, 2, or 3 provided that r and s are not zero at the same time; Z is carbon and Z taken together with R^1 and R^2 or Z taken together with R^3 and R^4 are S,

to which is grafted a polymer of a compound of the formula:



wherein R^7 is hydrogen, methyl or ethyl and R^8 is alkyl of from 3 to about 20 carbon atoms.

4,469,853

PROCESS FOR PREPARING POLYOLEFINS

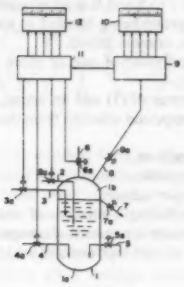
Ado Mori, Ichihara, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Chiyoda, Japan

Continuation of Ser. No. 201,397, Sep. 29, 1980, abandoned. This application Mar. 22, 1983, Ser. No. 477,615
Int. Cl.³ C08F 2/34
U.S. Cl. 526—59 **22 Claims**

1. A process for preparing a polyolefin having predetermined properties by polymerizing at least one olefin in the presence of a Ziegler catalyst and hydrogen in a gas/liquid phase reactor, said process comprising:
introducing the catalyst, olefin to be polymerized and hydrogen into a gas/liquid phase reactor and establishing a continuous gas phase space above the liquid phase in said reactor;
analyzing the concentrations of the one olefin and hydrogen in the gas space within said reactor by gas chromatography;
generating input signals representative of said detected concentrations;

comparing said input signals with preset values corresponding to said predetermined properties;

generating control signals as a function of deviations between said input signals and said preset values; and,



controlling the feed rates of said hydrogen and said one olefin responsive to said control signals.

4,469,854

CUPRIC SALTS USED IN REDOX POLYMERIZATION OF ETHYLENE CHLOROTRIFLUOROETHYLENE COPOLYMER

Swayambu Chandrasekaran, Mountain Lakes, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 14, 1981, Ser. No. 330,120

Int. Cl.³ C08F *210/02, 214/04*

U.S. Cl. 526—91 **20 Claims**

1. An improved process for the aqueous copolymerization of ethylene and chlorotrifluoroethylene, to produce a copolymer containing 20 to 80 mol percent ethylene, in the presence of a catalyst, comprising an oxidizing agent and a reducing agent, with a sufficient amount of water soluble buffer compound to maintain the pH from above 7 to about 10; wherein the improvement is the catalyst further comprising from 0.1 to 10 parts per million by weight of a cupric cation, supplied in the form of a water soluble cupric salt, based on the weight of the aqueous medium.

4,469,855

ETHYLENE COPOLYMERIZATION USING DILUENT GAS

Richard R. Cooper, Wheathampstead, England, assignor to Imperial Chemical Industries PLC, London, England

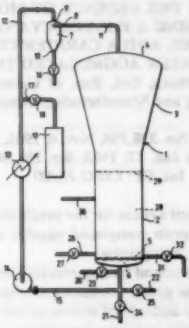
Filed May 23, 1983, Ser. No. 497,224

Claims priority, application United Kingdom, Jun. 1, 1982, 8215861

Int. Cl.³ C08F *10/02*

U.S. Cl. 526—106 **10 Claims**

1. A process for the preparation of a copolymer of ethylene which comprises contacting, in a polymerisation vessel, a gaseous mixture with a solid medium containing an olefin polymerisation catalyst, wherein the gaseous mixture comprises ethylene, at least one olefin comonomer containing at least 4 carbon atoms, at least one inert gaseous diluent and optionally hydrogen, wherein, within the polymerisation vessel, the partial pressure of the comonomer or comonomers containing at least 4 carbon atoms is such as to be greater than the saturated vapour pressure of the comonomer or comonomers at 10° C. and less than the saturated vapour pressure of the comonomer or comonomers at 60° C., the partial pressure of the ethylene is at least twice and not more than 1000 times the partial pressure of the comonomer, or comonomers, the partial pressure of the optional hydrogen is up to 1000 times the partial pressure of the comonomer, or comonomers, and



the inert gaseous diluent is present in an amount to give a total pressure of at least one MN/m^2 absolute.

4,469,856

NON-CRYSTALLINE POLYAMINE/CARBONIC ACID SALT COMPOSITIONS, A PROCESS FOR THEIR PREPARATION AND THEIR USE FOR THE PRODUCTION OF POLYURETHANE UREAS, ESPECIALLY FOAMED COATINGS

Werner Rasshofer, Cologne; Wilhelm Thoma, and Anton Schmitz, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 18, 1982, Ser. No. 434,788

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1981, 3143253

Int. Cl.³ C08G *18/81*

U.S. Cl. 528—45 **11 Claims**

1. Non-crystalline, liquid or fluid polyamine/carbonic acid salt compositions from polyamines and CO_2, which are prepared by mixing

(1) aliphatic or cycloaliphatic polyamines having primary and/or secondary amino groups,

(2) aliphatic or cycloaliphatic hydroxyamines having at least one hydroxyl group and at least one amino group

in quantitative proportions of (1) to (2) of from about 95:5 to 10:90% by weight, optionally

(3) diluents in the form of organic solvents having a boiling point below about 160° C. and at least partial solubility in water, in quantities of up to about 90% of solvent in the total mixture of (1) to (6), and optionally

(4) auxiliary agents and additives with

(5) from about 0.01 mol to 5 mol of water per amine equivalent, wherein the quantity of water must be at least 1 mol of water per mol of CO_2, and subsequently

(6) adding sufficient CO_2 to incorporate from about 0.01 to 0.99 mol of CO_2 per amine equivalent.

4,469,857

TWO COMPONENT SYSTEM FOR THE PRODUCTION OF A SYNTHETIC RESIN COMPOUND CAPABLE OF CURING IN THE ABSENCE OF MOISTURE CONTAINING A POLYISOCYANATE, A POLYENAMINE, AND A CARRIER COMPOUND HAVING WATER AGGREGATED THERETO

Günther John, Hamburg, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 328,758, Nov. 6, 1981, abandoned. This application Jun. 17, 1983, Ser. No. 502,612
Int. Cl.³ C08G 18/00
U.S. Cl. 528—59 7 Claims

1. A two-component system for the production of a flowable to plastic synthetic resin compound capable of curing in the absence of moisture, comprising:

(a) at least one compound having reactive isocyanate groups selected from the group consisting of diisocyanates, polyisocyanates, and adducts of an isocyanate and a polyol;

(b) at least one di- or polyenamine; and

(c) at least one active component comprising a carrier compound having water aggregated thereto.

4,469,858

TREE FOLIAGE EXTRACTS AND THEIR USE IN PHENOL-ALDEHYDE RESINS

Chia-Ming Chen, 205 Dove Valley Dr., Athens, Ga. 30606

Division of Ser. No. 126,982, Mar. 3, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,904
Int. Cl.³ C08G 83/00; C08L 61/06, 61/10, 61/14
U.S. Cl. 528—129 6 Claims

1. In a phenol-aldehyde resin the improvement consisting essentially of substituting for at least part of the phenol, a composition consisting essentially of an alkali, organic, water-soluble extract of coniferous foliage residue, said extract containing at least 2 percent by weight of crude protein, based upon the total weight of extracted organic compounds.

4,469,859

CURABLE RESIN COMPOSITION COMPRISING CYANATE ESTER AND CYCLOPENTADIENE

Morio Gaku, Showamachi, and Nobuyuki Ikeguchi, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,195
Claims priority, application Japan, Jul. 12, 1979, 54-88620
Int. Cl.³ C08G 83/00, 73/10
U.S. Cl. 528—159 8 Claims

1. A curable resin composition comprising:

(a) at least one cyanate ester compound selected from the group consisting of:

(1) a polyfunctional aromatic cyanate ester monomer having the formula:

$$R—O—C{\equiv}N)_m$$

wherein m is 2 to 5 and R is an aromatic organic group, the cyanate group being bonded to an aromatic ring of said aromatic organic group,

(2) a homoprepolymer of one or more cyanate esters of (1), and

(3) a coprepolymer of (1) and an amine; and

(b) at least one compound selected from the group consisting of:

(1) a cyclopentadiene,

(2) a dicyclopentadiene, and

(3) a polycyclopentadiene,

said composition including a mixture of components (a) and (b), a preliminary reaction product of components (a) and (b), or the combination of said mixture and said preliminary reaction product.

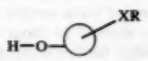
4,469,860

AROMATIC POLYCARBONATE RESIN END CAPPED WITH HYDROXY ARYLENE SULFONATE

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Sep. 28, 1981, Ser. No. 306,188
Int. Cl.³ C08G 63/62
U.S. Cl. 528—196 23 Claims

1. A composition comprising an endcapped aromatic carbonate polymer resin partially end-capped with an essentially non-emulsion making and non-Newtonian rheology making quantity of moiety derived from a compound of the formula



wherein ◯

is phenylene or naphthylene,

X is a sulfonate ($SO_3^{\ominus}$) group located on the ring in a position which is not ortho to the hydroxyl group,

R is an alkali or alkaline earth metal cation.

4,469,861

POLYCARBONATE COMPOSITION FROM BRANCHED CHAIN DIHYDRIC PHENOL

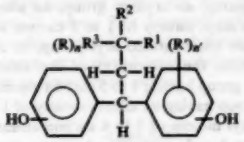
Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1982, Ser. No. 453,104
Int. Cl.³ C08G 63/62
U.S. Cl. 528—196 8 Claims

1. Polycarbonate resin derived from:

(i) a carbonate precursor; and

(ii) at least one dihydric phenol represented by the general formula



wherein:

R is independently selected from halogen radicals;

R' is independently selected from halogen radicals;

R^1 is selected from alkyl radicals containing from 1 to about 10 carbon atoms or hydrogen;

R^3 is selected from alkyl radicals containing from 1 to about 10 carbon atoms or hydrogen;

R^2 is selected from alkyl radicals containing from 1 to about 20 carbon atoms, with the proviso that when R^1 and R^3 are both hydrogen then R^2 is selected from branched alkyl radicals containing from at least 3 carbon atoms to about 20 carbon atoms; and

n and n' are independently selected from whole numbers having a value of from 0 to 4 inclusive.

4,469,862

POLYMERIC DIACYL PEROXIDES

Takeshi Komai; Toshihiro Izumi, and Syuji Suyama, all of Chita, Japan, assignors to Nippon Oil and Fats Co. Ltd., Japan

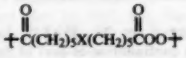
Filed Jun. 27, 1983, Ser. No. 508,197

Claims priority, application Japan, Jul. 5, 1982, 57-116619; Aug. 26, 1982, 57-146807; Nov. 18, 1982, 57-202725; Mar. 28, 1983, 58-52139

Int. Cl.³ C08G *67/00*

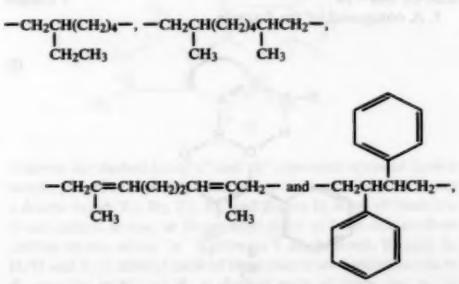
U.S. Cl. 528—271 **7 Claims**

1. Polymeric diacyl peroxide which consists essentially of a randomly oriented repeated structural unit of a general formula



(I)

wherein X represents a group selected from the group consisting of



and which has a mean molecular weight of 1,400–18,000.

4,469,863

NONIONIC NUCLEIC ACID ALKYL AND ARYL PHOSPHONATES AND PROCESSES FOR MANUFACTURE AND USE THEREOF

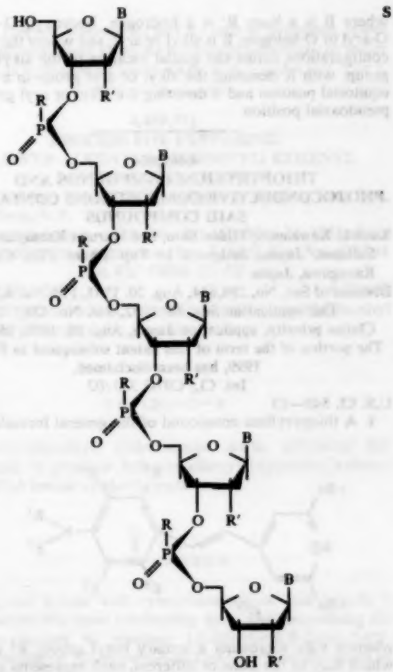
Paul O. P. Ts'o, 2117 Folkstone Rd., Lutherville, Md. 21093, and Paul S. Miller, 225 Hopkins Rd., Baltimore, Md. 21212

Filed Nov. 12, 1980, Ser. No. 206,297

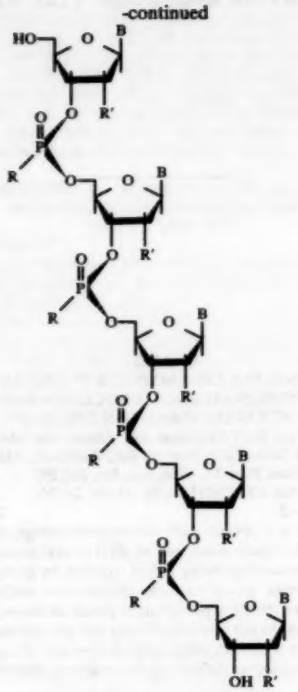
Int. Cl.³ C07H *21/02, 21/04, 21/00*

U.S. Cl. 536—27 **7 Claims**

1. Alkyl or aryl phosphonate nucleic acid analogs, comprising, at least five nucleosides, and an alkyl or aryl phosphonate group, said nucleosides being linked together by said alkyl or aryl phosphonate group to form phosphonate nucleic acid analogs, where the alkyl phosphonate group or the aryl phosphonate group do not sterically hinder the phosphonate linkage or interact with each other, said alkyl or aryl phosphonate nucleic acid analog as defined by the structural formula:



-continued



where B is a base; R' is a hydrogen, hydroxyl, O-alkyl or O-aryl or O-halogen; R is alkyl or aryl; and where the S and R configurations define the spatial location of the alkyl or aryl group, with R denoting the alkyl or aryl group in a pseudo-equitorial position and S denoting the alkyl or aryl group in a pseudoaxial position.

4,469,864

THIOPYRYLIUM COMPOUNDS AND PHOTOCONDUCTIVE COMPOSITIONS CONTAINING SAID COMPOUNDS

Kouichi Kawamura; Hideo Sato, and Harumi Katsuyama, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 294,644, Aug. 20, 1981, Pat. No. 4,389,474. This application Sep. 28, 1982, Ser. No. 425,773

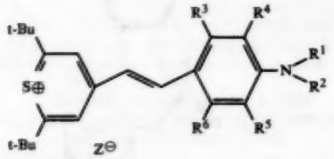
Claims priority, application Japan, Aug. 20, 1980, 55-114259

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ C07D *333/02*

U.S. Cl. 549—13 **1 Claim**

1. A thiopyrylium compound of the general formula (I)



(I)

wherein t-Bu represents a tertiary butyl group; R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, a substituted alkyl group wherein the substituent of the substituted alkyl group is a cyano group, a halogen atom, a hydroxy group, a carboxy group, an alkoxy group having 1 to 5 carbon atoms, an aryl group, an aryloxy group, an alkoxycarbonyl group having an alkyl moiety of 1 to 5 carbon atoms, or an acyloxy group, an unsubstituted aryl group, or a substituted aryl group wherein the substituent of the substituted aryl group is an alkyl group having 1 to 5 carbon atoms, an alkoxycarbonylalkyl group having an alkoxy moiety of 1 to 6 carbon atoms and an alkyl moiety of 1 to 6 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom, an amino group, a nitro group or a cyano group, with the proviso that both R^1 and R^2 are not both an alkyl group; R^3, R^4, R^5 and R^6, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, or a halogen atom; and Z^- represents an anion.

4,469,865

1,3-DISUBSTITUTED IMIDAZOLES

Kinji Iizuka; Tetsuhide Kamijo; Ryoji Yamamoto, and Hiromu Harada, all of Nagano, Japan, assignors to Kissei Pharmaceutical Co., Ltd., Nagano and Ono Pharmaceutical Co., Ltd., Osaka, both of, Japan

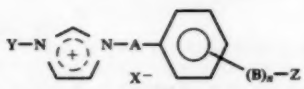
Filed Sep. 24, 1982, Ser. No. 423,332

Claims priority, application Japan, Sep. 28, 1981, 56-153404

Int. Cl.³ C07D *233/61, 233/60*

U.S. Cl. 548—341 **24 Claims**

1. A 1,3-disubstituted imidazole of the following formula:



wherein A and B may be the same or different, and each is a straight- or branched-chain alkylene or alkenylene group having 1 to 8 carbon atoms, Y is an acyl group having 2 to 10 carbon atoms, an alkoxycarbonyl group having 2 to 7 carbon atoms or a dialkoxymethyl group having 3 to 13 carbon atoms, Z is a cyano group or an alkoxycarbonyl group having 2 to 7 carbon atoms, X is a halogen atom, n is zero or 1.

4,469,866

INTERMEDIATES FOR PRODUCTION OF BENZOTHIAZINE CARBOXAMIDES

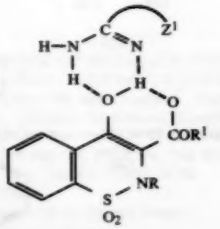
Joseph A. Kardys, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 389,119, Jun. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 289,390, Aug. 3, 1981, abandoned. This application Apr. 25, 1983, Ser. No. 488,208

Int. Cl.³ C07D *279/02, 401/12, 513/14, 513/22*

U.S. Cl. 544—14 **7 Claims**

1. A compound of the formula



(I)

wherein R is hydrogen, benzyl or alkyl having from one to three carbon atoms;

R^1 is benzyl or alkyl having from one to four carbon atoms and Z^1 taken together with —C=N— forms a heterocyclic group Z, where Z is 2-pyridyl, alkyl substituted-2-pyridyl, 2-thiazolyl, 2-thiazolyl substituted by one or two alkyl groups, or 5-alkyl-3-isoxazolyl, each alkyl having from one to four carbon atoms.

4,469,867

ISOCYANATOISOCYANURATES

Josef Disteldorf, and Werner Hübel, both of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Herne, Fed. Rep. of Germany

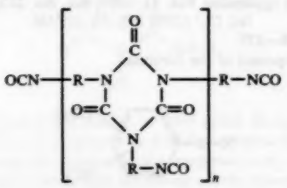
Filed Dec. 30, 1982, Ser. No. 454,633

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1981, 3151855

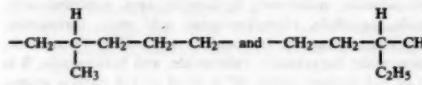
Int. Cl.³ C07D *251/34*

U.S. Cl. 544—222 **5 Claims**

1. A compound of the formula



wherein the R groups may be the same or different and are aliphatic divalent radicals selected from the group consisting of divalent aliphatic radicals having the formulas



and n is a whole or fractional number from 1 to 5.

4,469,868

ALKYLIMIDAZO[1,2-c]PYRAZOLO[3,4-e]PYRIMIDINES

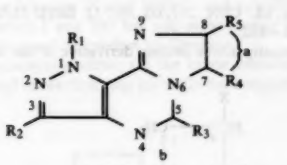
Horace A. DeWald, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 24, 1982, Ser. No. 381,484

Int. Cl.³ C07D *487/14*; A61K *31/305*

U.S. Cl. 544—251 **27 Claims**

1. A compound having the structural formula I



I

wherein the dashed lines "a" and "b" represent optional double bonds, provided that "a" is not a double bond when "b" is not a double bond; R_1, R_2, R_3, R_4, and R_5 are H, alkyl of from one to six carbon atoms, or fluorinated alkyl of from one to three carbon atoms; when "a" represents a single bond, R_4 may be H/H and R_5 is dialkyl each of from one to six carbon atoms or R_5 may be H/H and R_4 is dialkyl each of from one to six carbon atoms; and the pharmaceutically acceptable salts thereof.

4,469,869

3-(4-PIPERIDINIUM)-1,2-BENZISOXAZOLES

Joseph T. Strupczewski, Flemington, N.J.; Beth A. Gardner, San Jose, Calif., and Richard C. Allen, Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 407,235, Aug. 11, 1982, Pat. No. 4,408,054, which is a division of Ser. No. 319,871, Nov. 12, 1981, Pat. No. 4,355,037. This application May 9, 1983, Ser. No. 492,846

Int. Cl.³ C07D *413/04*

U.S. Cl. 546—198 **2 Claims**

1. 4-(4-Fluoro-1,2-benzisoxazol-3-yl)-1-methyl-1-phenoxycarbonylpiperidinium chloride.

4,469,870

NITROBENZOFURAN DERIVATIVES

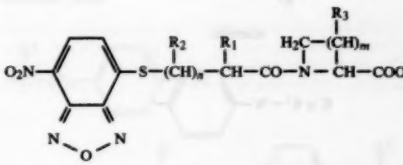
Callixtus E. Ita, South River, N.J.; Anthony F. Heald, Glen Mills, Pa., and Peter Egli, Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 345,883, Feb. 4, 1982, Pat. No. 4,395,556. This application Apr. 28, 1983, Ser. No. 489,681

Int. Cl.³ C07D *413/12*

U.S. Cl. 546—199 **2 Claims**

1. A compound having the formula



or a salt thereof, wherein R_1 and R_2 each is hydrogen, lower alkyl or phenyl-lower alkyl; R_3 is hydrogen, hydroxy or lower alkyl; R_4 is hydrogen or lower alkyl; m is 3; and n is 0, 1 or 2.

4,469,871

PROCESS FOR PREPARING 2-(LOWER-ALKOXY)-1-(PYRIDINYL) ETHENYL LOWER-ALKYL KETONES

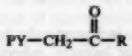
Karl O. Gelotte, Nassau, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 381,162, May 24, 1982, Pat. No. 4,417,054. This application Mar. 3, 1983, Ser. No. 471,961

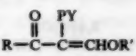
Int. Cl.³ C07D *211/02*

U.S. Cl. 546—249 **6 Claims**

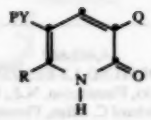
1. The process which comprises reacting pyridinylmethyl lower-alkyl ketone of the formula



with tri-(lower-alkyl) orthoformate, acetic anhydride and acetic acid to produce 2-(lower-alkoxy)-1-(pyridinyl)ethenyl lower-alkyl ketone of the formula



reacting said ketone with cyanoacetamide or malonamide in the presence of a basic condensing agent and neutralizing the reaction mixture to produce 1,2-dihydro-6-R-2-oxo-5-PY-nicotinonitrile or 1,2-dihydro-6-R-2-oxo-5-PY-nicotinamide of the formula



where R and R' are each lower-alkyl, PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents and Q is cyano or carbamyl.

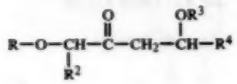
4,469,872

SUBSTITUTED PYRIDYLOXYPHENOXYHYDROXYKETONES

Richard J. Anderson, Palo Alto, and Shy-Fuh Lee, Sunnyvale, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

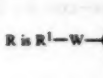
Filed Aug. 20, 1982, Ser. No. 410,172
Int. Cl.³ C07D *213/64*
U.S. Cl. 546—302 **7 Claims**

1. A compound of the following formula:



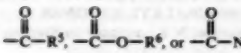
(B)

wherein,

R is  ;

R^1 is ;

R^2 is hydrogen or lower alkyl;
R^3 is hydrogen, lower alkyl,



R^4 is lower alkyl;
R^5 is lower alkyl, lower haloalkyl, substituted or unsubstituted phenyl, substituted or unsubstituted benzyl, or substituted or unsubstituted phenoxyloweralkyl;
R^6 is lower alkyl;
R^7 is hydrogen, lower alkyl or substituted or unsubstituted phenyl;
W is oxygen; and
each of Y and Z is independently hydrogen, lower alkyl, lower haloalkyl, or halogen, wherein substituted phenyl, substituted benzyl and substituted/phenoxy loweralkyl are substituted with one, two or three substituents selected from lower alkyl, lower haloalkyl, lower alkoxy, halogen, nitro or cyano at ring carbon atoms.

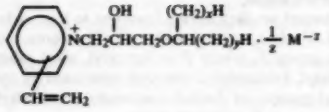
4,469,873

VINYL PYRIDINIUM MONOMERS

Edward C. Y. Nieh, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,092
Int. Cl.³ C07D *213/02*
U.S. Cl. 546—344 **5 Claims**

1. A composition matter of the general formula:



wherein x and y are each integers of from 0 to 20 such that the sum of x plus y is an integer of from 8 to 20 and M is an anion of an organic or mineral acid having a valence of z wherein M is selected from the group consisting of chloride, bromide, iodide, lactate, gluconate, sulfate, nitrate, alkylsulfate, alkylsulfonate, arylsulfonate, formate, propionate, oxalate, phenylsulfonate, benzoate, borate and acetate.

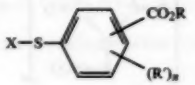
4,469,874

FRAGRANT PREVULCANIZATION INHIBITORS

Otto W. Maender, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 152,279, May 22, 1980, Pat. No. 4,283,508.
This application Feb. 12, 1981, Ser. No. 233,796
Int. Cl.³ C07D *209/48, 207/48*
U.S. Cl. 548—475 **10 Claims**

1. A compound of the formula:



in which X is an amide inhibitor moiety attached through the nitrogen atom derived from the group consisting of 2-benzimidazolinone, 2-imidazolidinone, 2-benzothiazolone, 2-thiazolone, phthalimide, succinimide, glutarimide, hexahydrophthalimide, maleimide, hydantoin, urea, naphthalimide, oxamide, oxanilide, phenylcarbamic acid ester, formamide, formanilide, acetamide, benzamide, acetanilide, benzanilide, propionamide, butyramide, valeramide, and hexanamide, R is alkyl of 1–8 carbon atoms, R' is alkyl of 1–8 carbon atoms, alkoxy of 1–8 carbon atoms, —CO_2—R, or halo, and n is 0, 1 or 2.

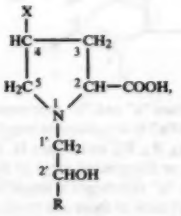
4,469,875

OPTICALLY ACTIVE PROLINE DERIVATIVE, PROCESS FOR ITS PRODUCTION AND USE

Eberhard Busker, Pulheim; Jürgen Martens, Alzenau; Regina Steigerwald, Blankenbach, and Horst Weigel, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 426,132
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1981, 3143726
Int. Cl.³ C07C *207/00, 207/12*; B01D *15/08*
U.S. Cl. 548—532 **17 Claims**

1. An optically active proline derivative of the formula



(I)

in which X is a hydrogen atom or a hydroxyl group and R is a hydrogen atom, an unsubstituted or 1–5 carbon atoms alkyl group substituted phenyl group or is an alkyl group having 1 to 20 carbon atoms.

4,469,876

PROCESS FOR THE PRODUCTION OF L-PROLINE

Karlheinz Drauz, Freigericht; Axel Kleemann, Hanau; Jürgen Martens, Alzenau; Paul Scherberich, Constance, and Franz Effenberger, Stuttgart, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Sep. 16, 1982, Ser. No. 418,841

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137377

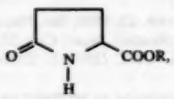
Int. Cl.³ C07D *207/12*

U.S. Cl. 548—535 **7 Claims**

1. A process for the production of L-proline from an L-pyroglutamic acid ester comprising

(a) reacting an L-pyroglutamic acid ester of the formula

(I)

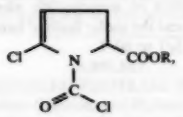


in which R is a methyl or ethyl group in an inert solvent with 2 to 12 moles per mole of the compound employed of formula (I) of phosgene at a temperature of −30° to +50° C. and subsequently separating off the solvent and excess phosgene by distillation,

(b) heating the residue obtained in reaction step (a) in an inert solvent with at least 1 mole per mole of the originally employed compound of general formula (I) of a tertiary amine as an acid acceptor for 3 to 10 hours at a temperature between 60° and 100° C.,

(c) hydrogenating either (1) the crude reaction mixture obtained in reaction step (b) or (2) the compound of formula

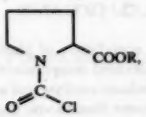
(III)



isolated therefrom by distillation and dissolved in an inert solvent, in the presence of a metal of the eighth side group of the periodic system or a compound of such a metal as a hydrogenation catalyst and at least the stoichiometrical amount of a tertiary amine as an acid acceptor at a temperature between 0° and 100° C. and a hydrogen pressure between 1 and 300 bar and subsequently separating the hydrogenation catalyst by filtration,

(d) hydrolyzing either (1) the crude reaction mixture obtained in reaction step (c) or (2) the compound of formula

(IV)



isolated therefrom by distillation, with an aqueous mineral acid or a mixture of an aqueous mineral acid and formic acid or acetic acid at a temperature between 50° C. and the reflux temperature, and

(e) isolating from the hydrolysis mixture obtained in reaction step (d) the L-proline contained therein.

4,469,877

PHOTOGRAPHIC PRODUCTS

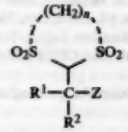
Alan L. Borror, Lexington, and Ernest W. Ellis, Carlisle, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 360,822, Mar. 23, 1982, Pat. No. 4,388,398. This application Mar. 14, 1983, Ser. No. 475,222

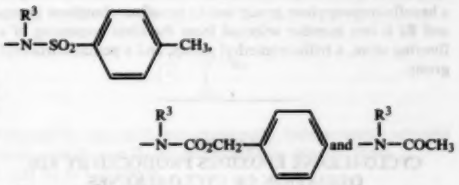
Int. Cl.³ C07D *339/00, 339/08*

U.S. Cl. 549—21 **6 Claims**

1. A compound of the formula



wherein R^1 is a monovalent organic radical selected from alkyl, cycloalkyl, alkaryl, aralkyl and heterocyclic aryl; R^2 is hydrogen or a monovalent organic radical selected from alkyl, cycloalkyl, alkaryl, aralkyl and heterocyclic aryl; Z is a moiety selected from



wherein R^3 is hydrogen, alkyl or phenyl; and n is an integer 3, 4 or 5.

4,469,878

METHOD FOR MANUFACTURE OF PHTHALIC ANHYDRIDE

Masataka Kaneyasu, and Tadanori Hara, both of Kitakyushu, Japan, assignors to Nippon Steel Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,636

Claims priority, application Japan, Sep. 30, 1981, 56-155657; Sep. 30, 1981, 56-155658

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—248 **12 Claims**

1. A method for the manufacture of phthalic anhydride by the catalytic oxidation of naphthelene or ortho-xylene which comprises contacting a mixed gas consisting of naphthalene or ortho-xylene and a molecular oxygen-containing gas with a catalyst bed comprising a first catalyst packed on the upstream side of the flow of mixed gas and a second catalyst packed on the down-stream side of the flow, wherein the first catalyst has carried on a nonporous inactive carrier a catalytically active component composed of 67 to 90% by weight of titanium dioxide, 9 to 30% by weight of vanadium pentoxide and 0.7 to 3% by weight of a rubidium compound (calculated as Rb_2SO_4), and the second catalyst has carried on the nonporous inactive carrier a catalytically active component composed of 67 to 94% by weight of titanium dioxide, 5 to 30% by weight of vanadium pentoxide and at least one member selected from the group consisting of 0.1 to 1% by weight of a tin compound (calculated as SnO_2) and 0.5 to 3% by weight of a phosphorus

compound (calculated as P_2O_5), said first catalytically active component substantially does not contain either a tin compound or a phosphorus compound and said second catalytically active component substantially does not contain an alkali metal compound whereby, in the upstream side, the mixed gas does not pass over a catalyst containing phosphorus.

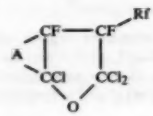
4,469,879

TRICHLOROPOLYFLUORO-BICYCLO ETHERS

Takashi Abe, Kasugai; Hajime Baba, Nagoya; Eiji Hayashi, Kohnan, and Shunji Nagase, Nagoya, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jan. 14, 1983, Ser. No. 458,038
Claims priority, application Japan, Feb. 12, 1982, 57-21637
Int. Cl.³ C07D *307/82*
U.S. Cl. 549—465 10 Claims

1. A trichloropolyfluoro-bicyclo ether of the formula:



wherein A is one member selected from the class consisting of a hexafluoropropylene group and an octafluorobutylene group and Rf is one member selected from the class consisting of a fluorine atom, a trifluoromethyl group, and a pentafluoroethyl group.

4,469,880

CYCLOALKANE EPOXIDES PRODUCED BY AIR OXIDATION OF CYCLOALKENES

John R. Sanderson; Lewis W. Watts, Jr.; Terry L. Renken, all of Austin, and Steven H. Vanderpool, New Braunfels, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,103
Int. Cl.³ C07D *301/06*
U.S. Cl. 549—532 1 Claim

1. A method for the production of cyclododecane epoxide consisting essentially of

reacting cyclododecene with oxygen in the presence of a boron-containing catalyst selected from the group consisting of lithium borate, sodium borate, strontium borate, barium metaborate, zinc borate, the combination of zinc borate and ferric borate, the combination of barium borate and nickel borate and mixtures thereof in the presence of a carboxylate ion-generating solvent selected from the group consisting of acetic acid, acetic anhydride and mixtures thereof at a temperature in the range of about 50° to 150° C.

4,469,881

[2-(P-t-BUTYLPHENYL)ETHYL]SILANES AND METHOD OF MAKING THE SAME

Barry C. Arkles, Oreland, Pa., assignor to Petrarch Systems Inc., Bristol, Pa.

Filed Sep. 27, 1982, Ser. No. 424,783
Int. Cl.³ C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—453 11 Claims

1. [2-(p-t-butylphenyl)ethyl]silanes of the general formula

$$Si(B)_x(R)_y(A)_z$$

wherein B is a 2-(p-t-butylphenyl)ethyl group, R is an organic substituent selected from the group consisting of aryl and alkyl groups, A is a hydrolyzable moiety, and where x equals 1 or 2, y equals 0, 1 or 2 and z equals 1, 2 or 3 such that x plus y plus z equals 4.

4,469,882

PROCESS FOR THE PRODUCTION OF AROMATIC CARBAMATES

Tsutomu Takeuchi; Mineo Nishi; Toshio Irie, and Hirotaka Ryuto, all of Fukuoka, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

PCT No. PCT/JP81/00293, § 371 Date Jun. 23, 1982, § 102(e) Date Jun. 23, 1982, PCT Pub. No. WO82/01550, PCT Pub. Date May 13, 1982
PCT Filed Oct. 22, 1981, Ser. No. 395,068
Claims priority, application Japan, Oct. 23, 1980, 55-148828
Int. Cl.³ C07C *125/065, 125/073*
U.S. Cl. 560—25 14 Claims

1. A process for producing an aromatic carbamate by reacting to a temperature of from 100° to 250° C., at a pressure of from 1 to 100 Kg/cm² and at a time of from 10 minutes to 15 hours an aromatic nitro compound, a monohydric alcohol or a monohydric phenol, and carbon monoxide in the presence of a catalyst wherein the catalyst comprises:

(1) from 0.5 to 20 mmol of a platinum group metal or a halide, cyanide, thiocyanide, oxide, nitrate, carbonate, sulfate, oxalate or acetate thereof (calculated as a metal);
(2) from 1 to 70 mmol of metallic vanadium or its compound (calculated as vanadium metal);
(3) from 0.3 to 50 mmol of metallic iron or its compound (calculated as iron metal);
(4) from 30 to 40 mmol of a halogen atom; and
(5) from 10 to 5,000 mmol of a heterocyclic amine, all of the above (1) thru (5) being calculated per one kilogram of the monohydric alcohol or monohydric phenol fed to the reaction system, and the molar ratio of halogen atom to all metals is from 0.5/1 to 60/1.

4,469,883

PALLADIUM CATALYZED OXY-ACETYLATION OF PHENYL ACETATE TO META-ACETOXYACETOPHENONE

Chao-Yang Hsu, Media, and James E. Lyons, Wallingford, both of Pa., assignors to Sun Tech, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 137,708, Apr. 7, 1980, abandoned. This application May 11, 1981, Ser. No. 262,158
Int. Cl.³ C07C *67/00*
U.S. Cl. 560—131 10 Claims

1. A process for the acetylation of phenyl acetate, which comprises reacting, at elevated temperature and pressure and in the presence of a palladium catalyst and a gas mixture comprising an inert gas and more than 13 vol. % oxygen, a reaction mixture comprising phenyl acetate, acetic acid and acetic anhydride, whereby acetoxyacetophenone is produced as the predominant product.

4,469,884
PREPARATION OF N-METHOXY-N-METHYLURETHANES

Gernot Reissenweber, Boehl-Iggelheim, and Ulrich Schirmer, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 14, 1983, Ser. No. 484,886

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1982, 3213684

Int. Cl.[3] **C07C** *125/065*

U.S. Cl. 560—160 **1 Claim**

1. A process for the preparation of an N-methoxy-N-methylurethane, in which first (1) hydroxylamine is converted with an alkyl chloroformate to the corresponding N-hydroxyurethane, then (2) this product is reacted with a methylating agent to give the N-methoxy-N-methylurethane, and finally (3) the N-methoxy-N-methylurethane is isolated, wherein first,

(1) while constantly maintaining a temperature of from −10° to 20° C. and a pH of from 2 to 7,

(1.1) a 0.5–3 molar aqueous solution of an inorganic hydroxylammonium salt is mixed vigorously and thoroughly with

(1.2) an equimolar amount of an alkyl chloroformate, then,

(2) while constantly maintaining a temperature of from 10° to 50° C. and a pH of from 7 to 14,

(2.1) a mixture comprising

(2.1.1) 100 parts by volume of the reaction mixture obtained as described in (1),

(2.1.2) from 10 to 50 parts by volume of a water-insoluble organic solvent and

(2.1.3) from 0.1 to 2 mole-%, based on the N-hydroxyurethane present in the reaction mixture under (2.1.1), of a phase-transfer catalyst, is mixed vigorously and thoroughly with

(2.2) from 100 to 150 equivalent-%, based on the N-hydroxyurethane present in the reaction mixture under (2.1.1), of a water-insoluble methylating agent which is soluble in the solvent under (2.1.2),

and the resulting mixture is kept at from 10° to 50° C. for from 1 to 5 hours, and finally,

(3) any methylating agent still present in the reaction mixture obtained as described in (2) is destroyed, the non-aqueous liquid phase is separated off from the mixture thus treated, and the N-methoxy-N-methylurethane is isolated from this phase by stripping off the solvent.

4,469,885
HALOGENATED PROTEASE INHIBITORS

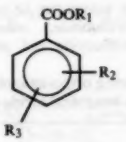
Richard A. Mueller, Glencoe, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed May 9, 1983, Ser. No. 492,843

Int. Cl.[3] **C07C** *65/32*

U.S. Cl. 562—459 **11 Claims**

1. A compound of the formula



wherein R_1 is:

(a) hydrogen; or

(b) alkyl of 1 to 6 carbon atoms, inclusive

wherein R_2 is

(a) halogen; or

(b) trifluoromethyl;

wherein R_3 is:

(a) $-C(O)R_4$;

(b) $-CH(OH)R_4$;

(c) $-CH_2R_4$; or

(d) $-CH{=}CHR_4$;

wherein R_4 is alkyl of 13 to 25 carbon atoms inclusive and the pharmacologically acceptable base addition salts thereof.

4,469,886
SELECTIVE HYDROCARBOXYLATION OF PROPYLENE TO ISOBUTYRIC ACID

Frederick A. Pesa, Aurora, and Thomas A. Haase, University Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 206,817, Nov. 14, 1980, abandoned. This application Apr. 15, 1982, Ser. No. 368,533

Int. Cl.[3] **C07C** *51/14, 53/124*

U.S. Cl. 562—522 **20 Claims**

1. A process for the selective hydrocarboxylation of propylene to produce butyric acid in the liquid phase at a temperature of about 75° C. to 150° C. and a pressure of about 250 psi to about 5000 psi, wherein the isobutyric acid isomer product predominates, comprising forming a reaction mixture of propylene, carbon monoxide and water in the presence of a catalyst comprising palladium or a palladium compound, a hydrogen halide and a phosphoamine ligand represented by the formula

wherein at least one of R_1, R_2 and R_4 is an amino group represented by the formula

wherein R_1, R_2 and R_4 are additionally, independently selected from, and R_5 and R_6 are independently selected from:

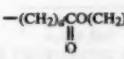
(1) C_1 to C_{12} alkyls;

(2) $-O(CH_2)_aCH_3$, where a=0 to about 11;

(3)

where b=0 to about 11;

(4)



where d=0 to about 10; e=0 to about 10 and d+e≦10;

(5)

where f=0 to about 11, g=0 to about 11; and f+g≦11;

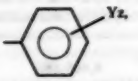
(6)

where i=0 to about 11, j=0 to about 11; and i+j≦11;

(7) $-(CH_2)_kX$, where X=F, Cl, Br or I and k=1 to about 12;

(8) $-(CH_2)_mCN$, where m=0 to about 11; and

(9)



where Y is meta- or para-positioned and is selected from groups (1) through (8) above, and z=0 to 2;
and wherein R_5 and R_6 are additionally, independently selected from hydrogen.

4,469,887

PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID FROM ISOBUTYRALDEHYDE

Rudolf Brockhaus, Marl, and Hans-Jürgen Franke, Dorsten, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 357,126, Mar. 11, 1982, Pat. No. 4,403,098. This application Oct. 26, 1982, Ser. No. 436,768
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1981, 3142487
Int. Cl.³ C07C *57/065, 51/27, 45/58*; C07D *301/06*
U.S. Cl. 562—599 **7 Claims**

1. A multi-stage process for producing methacrylic acid from isobutyraldehyde, comprising:
(a) acetalizing isobutyraldehyde with a not branched C_{1-4}-alkanol in the presence of an acidic catalyst, to form the corresponding isobutyraldehyde acetal;
(b) cleaving the latter acetal in the presence of an acidic catalyst to form the corresponding isobutenyl ether and alcohol;
(c) oxidizing the isobutenyl ether to form the corresponding epoxide by reacting it with O_2 in the presence of 50–500 ppm of an alkali or alkaline earth metal hydroxide at a temperature of 30°–70° C.;
(d) hydrolyzing the epoxide to form a α-hydroxyisobutyraldehyde;
(e) oxidizing the latter product with 1.2–2 moles of nitric acid per mole of aldehyde at a temperature of 20°–110° C. to form α-hydroxyisobutyric acid; and
(f) splitting-off water from the latter to produce methacrylic acid.

4,469,888

PROCESS FOR THE PREPARATION OF 2,4-DINITRO-2,4-DIAZAPENTANE

Robert C. Gill, White Plains, and George W. Nauflett, Fort Washington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1982, Ser. No. 391,902
Int. Cl.³ C07C *111/00*
U.S. Cl. 564—109 **5 Claims**

1. The improved method for the production of dimethylmethylenedinitramine comprising the steps of dissolving methylnitramine in a suitable halogenated organic solvent selected from the group consisting of methylene chloride, chloroform and ethylene chloride and reacting the dimethylmethylenedinitramine with formaldehyde in the presence of a strong sulfuric acid catalyst for a period of at least 20 minutes at a temperature ranging from 0° C. to −20° C., to yield a final product having a yield rate of 70% or greater dimethylmethylenedinitramine.

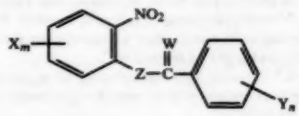
4,469,889

2-(2-NITROPHENYL)-1-PHENYLETHANONE OXIME ACETATES

Lawrence L. Martin, Lebanon, N.J.; Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, and Charles A. Crichlow, Piscataway, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Incorporated, Somerville, N.J.

Division of Ser. No. 300,022, Sep. 8, 1981, abandoned, which is a division of Ser. No. 91,062, Nov. 5, 1979, Pat. No. 4,309,424, which is a continuation-in-part of Ser. No. 948,896, Oct. 5, 1978, abandoned. This application Oct. 12, 1983, Ser. No. 541,367
Int. Cl.³ C07C *131/00*
U.S. Cl. 564—254 **6 Claims**

1. A compound of the formula



in which Z is methylene; W is a group of the formula NOR_5 wherein R_5 is alkanoyl of from 1 to 5 carbon atoms; X and Y are the same or different and each can be hydrogen, chlorine, bromine, fluorine, methoxy, alkyl of from 1 to 3 carbon atoms, hydroxy or trifluoromethyl; and m is the integer 1 or 2; n is the integer 1, 2 or 3.

4,469,890

PREPARATION OF ORTHO-AMINOBENZOTRIFLUORIDE

John P. Chupp, Kirkwood; Thomas E. Neumann, Creve Coeur, and Michael J. Miller, Manchester, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 7, 1983, Ser. No. 530,152
Int. Cl.³ C07C *85/00, 85/11*
U.S. Cl. 564—417 **4 Claims**

1. A process for preparing ortho-aminobenzotrifluoride which process comprises the steps of:
(a) reacting benzotrifluoride with a halogen selected from the group consisting of chlorine and bromine in the presence of a halogenation catalyst selected from the group consisting of $FeCl_3$, $Fe/FeCl_3$, and $SbCl_5$ to produce a crude halogenation reaction mixture containing meta-halobenzotrifluoride and other mono and di-halo substituted benzotrifluorides;
(b) reacting said crude halogenation reaction mixture with nitric acid in the presence of sulfuric acid to form a crude organic nitration reaction mixture, said reaction being carried out at a temperature at which the monohalobenzotrifluoride isomers are preferentially nitrated but the di-halo isomers do not undergo appreciable nitration;
(c) reacting said organic nitration reaction mixture with hydrogen in the presence of a hydrogenation catalyst and a hydrogen halide scavenger to produce a mixture of ortho-aminobenzotrifluoride, other amino-substituted isomers of benzotrifluoride and unsubstituted benzotrifluoride; and
(d) separately recovering ortho-aminobenzotrifluoride product and recyclable benzotrifluoride for use in step (a).

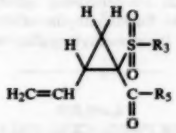
4,469,891

SUBSTITUTED-CYCLOPROPYL SULFONES

Richard G. Fayter, Jr., Fairfield, and Allen L. Hall, Amelia, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 345,875, Feb. 4, 1982, Pat. No. 4,446,077. This application Jan. 13, 1984, Ser. No. 570,578
Int. Cl.³ C07C *49/533, 47/395*
U.S. Cl. 568—031 **2 Claims**

1. A compound of the formula



wherein R_3 and R_5 are C_{1-8} alkyl, C_{3-8} alkenyl, cyclohexyl, phenyl, benzyl or C_{1-4} alkyl-substituted cyclohexyl, phenyl or benzyl.

4,469,892

BRANCHED CHAIN SATURATED KETONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

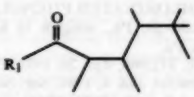
Richard M. Boden, Ocean, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 399,067, Jul. 16, 1982, which is a continuation-in-part of Ser. No. 354,389, Mar. 2, 1982, , which is a division of Ser. No. 252,334, Apr. 9, 1981, Pat. No. 4,336,164, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Feb. 3, 1983, Ser. No. 463,484

Int. Cl.³ C07C 49/04

U.S. Cl. 568—382 5 Claims

1. At least one compound defined according to the structure:



wherein R_1 is C_1–C_3 lower alkyl.

4,469,893

METHOD FOR THE PREPARATION OF NITRODIPHENYL ETHERS

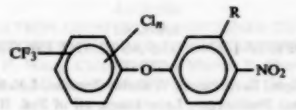
David Y. Tang, Amherst; Byron R. Cotter, Grand Island, both of N.Y., and Frederick J. Goetz, Santa Ana, Calif., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,533

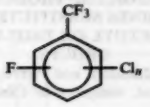
Int. Cl.³ C07C 76/02, 79/35, 79/36

U.S. Cl. 568—424 26 Claims

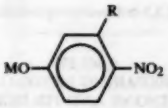
1. A process for the preparation of diphenyl ethers of the formula



wherein n is 1 or 2, R is hydrogen; formyl; cyano; alkyl, of 1–6 carbon atoms; alkoxy, of 1–6 carbon atoms; chloro; bromo; N, N-dialkyl amino, the alkyl group being preferably 1–4 carbon atoms; carboxyl, carboxylate salts; or carboxylate esters of the formula CO_2R' wherein R' is alkyl of 1–6 carbon atoms, which comprises reacting a chlorofluorobenzotrifluoride of the formula



where n is defined above, with a nitro-phenoxide of the formula



where R is defined above, and M is a cation of an alkali metal or an alkaline earth metal.

4,469,894

PROCESS FOR PREPARATION OF HYDROXYBENZALDEHYDES

Kazuhiko Hamada, and Gohfu Suzukamo, both of Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Jun. 16, 1982, Ser. No. 388,817

Claims priority, application Japan, Jun. 16, 1981, 56-93314

Int. Cl.³ C07C 45/45

U.S. Cl. 568—437 4 Claims

1. In a process for the preparation of a mixture of salicylaldehyde and p-hydroxybenzaldehyde by the reaction of a phenol and an alkali metal hydroxide in a heterogeneous system by a Reimer-Tiemann reaction, the improvement which comprises reacting an alkali metal salt of a phenol with a reaction mixture comprised of chloroform, a slurry of alkali metal hydroxide, a surfactant and an inert organic solvent under an anhydrous reaction condition or a substantially anhydrous reaction condition wherein said reacting is carried out at a temperature of from 50° C. to 100° C., the ratio of phenol/alkali/chloroform is from 1.0/10.0/10.0 to 1.0/2.0/0.3 and the surfactant is present in an amount of from 0.1 to 5.0 mol % of the alkali metal salt of the phenol.

4,469,895

PROCESS FOR PREPARING ALCOHOLS FROM OLEFINS AND SYNTHESIS GAS

John F. Knifton, Austin, and Robert A. Grigsby, Jr., Georgetown, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 21, 1982, Ser. No. 435,814

Int. Cl.³ C07C 45/50

U.S. Cl. 568—454 24 Claims

1. A process for preparing predominately linear alcohols and aldehydes from olefins which comprises the steps of contacting a terminal and/or internal olefin and synthesis gas with a catalyst system comprising a ruthenium-containing compound in conjunction with a promoter from the group consisting of aryl amines, aliphatic amines and n-heterocyclic amines containing one or more tertiary substituted nitrogen atoms per molecule, with each trivalent nitrogen bonded to one or more carbon atoms, dispersed in a low-melting quaternary phosphonium salt and heating resultant reaction mixture under a pressure of 100 psi or greater at a temperature of at least 50° C. until said alcohols and aldehydes are formed.

4,469,896

PROCESS FOR THE PRODUCTION OF CHLOROPYRIDINES SUBSTITUTED BY METHYL, TRICHLOROMETHYL OR TRIFLUOROMETHYL GROUPS

Eginhard Steiner, Füllinsdorf, and Pierre Martin, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 293,804, Aug. 17, 1981, abandoned. This application Jul. 8, 1983, Ser. No. 512,085

Int. Cl.³ C07C 47/14

U.S. Cl. 568—495 1 Claim

1. 2,2-Dichloro-3,3,3-trifluoropropionaldehyde.

4,469,897

PROCESS FOR PREPARING MONOALKYLETHERS OF HYDROQUINONE AND ITS DERIVATIVES

Franco Rivetti, Schio; Ugo Romano, Vimercate, and Nicola Di Muzio, Peschiera Borromeo, all of Italy, assignors to Anic S.p.A., Palermo, Italy

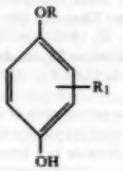
Filed Oct. 21, 1981, Ser. No. 313,677

Claims priority, application Italy, Nov. 13, 1980, 25933 A/80; Nov. 13, 1980, 25934 A/80

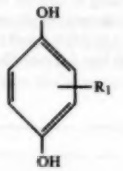
Int. Cl.³ C07C 41/09

U.S. Cl. 568—650 10 Claims

1. A process for preparing monoalkylethers of hydroquinone and of substituted hydroquinones of general formula



in which R is an alkyl group and R_1 is hydrogen or an alkyl group, characterised in that a hydroquinone compound of general formula



is reacted with an alcohol of formula R—OH in the presence of a transition metal salt selected from copper and iron salts, at a temperature of from 25° C. to 150° C.

4,469,898

METHOD OF SYNTHESIZING FLUOROMETHYLHEXAFLUOROISOPROPYL ETHER

Clifford L. Coon, Fremont, and Robert L. Simon, San Carlos, both of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 291,881, Aug. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 107,117, Dec. 26, 1979, Pat. No. 4,250,334. This application Dec. 6, 1982, Ser. No. 446,930

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.³ C07C 41/01, 41/42

U.S. Cl. 568—683 13 Claims

1. The method of synthesizing fluoromethylhexafluoroisopropyl ether, comprising mixing hexafluoroisopropyl alcohol, formaldehyde, hydrogen fluoride, and a protonating, dehydrating and fluoride ion-generating agent under conditions suitable to generate fluoromethylhexafluoroisopropyl ether, and recovering the fluoromethylhexafluoroisopropyl ether.

4,469,899

PROCESS FOR PRODUCING PHLOROGLUCIN

Makoto Nakamura, Ibaraki; Tsutomu Chiyoda, Toyonaka, and Shinichi Hasegawa, Otsu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 11, 1982, Ser. No. 407,159

Claims priority, application Japan, Aug. 27, 1981, 56-134894

Int. Cl.³ C07C 37/08, 39/12

U.S. Cl. 568—768 3 Claims

1. A process for producing phloroglucin which comprises reacting an oxidation product containing at least one carbinol compound of carbinol dihydroperoxide, dicarbinol hydroperoxide and tricarbinol obtained by oxidation of 1,3,5-triisopropylbenzene, with hydrogen peroxide in a heterogeneous system in the presence of an acid catalyst and an organic solvent inert to the hydrogen peroxide and capable of dissolving the oxidation product, and thereafter decomposing the reaction product with an acid, wherein the organic solvent is a halogenated hydrocarbon or ether, wherein the amount of hydrogen peroxide is in the range of 1.5 to 10 equivalents based on carbinol group of the carbinol compounds, and wherein the hydrogen peroxide is used in an aqueous solution having a concentration of 5 to 50% by weight.

4,469,900

COMPLEX FORMED FOR SEPARATING CHLORINATED PHENOLS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 372,060, Apr. 26, 1982, Pat. No. 4,429,168. This application Jan. 4, 1984, Ser. No. 567,957

Int. Cl.³ C07C 39/24

U.S. Cl. 568—774 6 Claims

1. A complex consisting essentially of o-chlorophenol and calcium bromide.

4,469,901

COMPLEX FORMED FOR SEPARATING ISOPROPYLATED M-CRESOLS

Gerd Leston, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 372,055, Apr. 26, 1982, Pat. No. 4,429,169. This application Jan. 3, 1984, Ser. No. 567,791

Int. Cl.³ C07C 39/06

U.S. Cl. 568—781 1 Claim

1. A complex consisting essentially of m-thymol and calcium bromide.

4,469,902

1-IODOPROP-1-YN-3-OLS AS PLANT PROTECTION AGENTS

Gerhard Jäger, Leverkusen; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

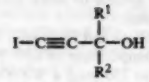
Filed Jun. 14, 1982, Ser. No. 378,308

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122177

Int. Cl.³ C07C 33/48

U.S. Cl. 568—812 9 Claims

1. A 1-iodoprop-1-yn-3-ol of the formula



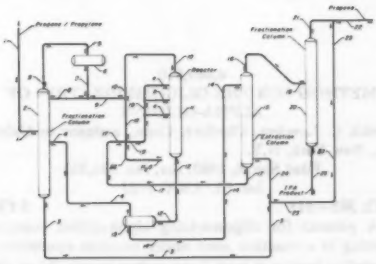
in which
R^1 is optionally substituted aryl, and
R^2 is alkyl or cycloalkyl.

4,469,903

PROCESS FOR THE PRODUCTION OF ISOPROPYL ALCOHOL

Robert J. Schmidt, Rolling Meadows, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 21, 1983, Ser. No. 534,226
Int. Cl.³ C07C *29/86, 29/80, 29/04*
U.S. Cl. 568—918 **14 Claims**



1. A process for the production of a C_2, C_3, C_4 or C_5 aliphatic alcohol which comprises the steps of:

(a) contacting a feed olefinic hydrocarbon having 2, 3, 4 or 5 carbon atoms per molecule with a molar excess of water and with a solid hydration catalyst in a reaction zone and producing a liquid phase hydration zone effluent stream which comprises water and a C_2, C_3, C_4 or C_5 aliphatic alcohol;

(b) passing at least a liquid-phase portion of the hydration zone effluent stream into a liquid-liquid extraction zone wherein said portion of the hydration zone effluent stream is contacted with a solvent comprising a paraffinic hydrocarbon having the same number of carbon atoms as the aliphatic alcohol, and thereby forming an extract stream which comprises the aliphatic alcohol and the paraffinic hydrocarbon; and

(c) separating the aliphatic alcohol and the paraffinic hydrocarbon contained in the extract stream by fractionation, recycling at least a portion of the thus-separated paraffinic hydrocarbon to the extraction zone, and withdrawing the aliphatic alcohol.

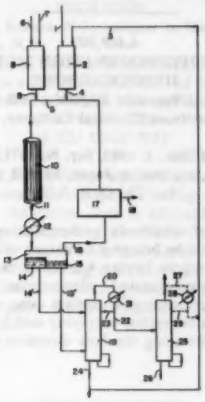
4,469,904

PREPARATION OF NITRO COMPOUNDS BY VAPOR PHASE NITRATION OF CARBOXYLIC ACIDS

Shu-Chieh P. Wang, Columbia, and Martin B. Sherwin, Potomac, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jul. 5, 1983, Ser. No. 510,858
Int. Cl.³ C07C *76/02, 79/10*
U.S. Cl. 568—948 **20 Claims**

1. A process for selectively forming nitroalkanes and nitroaromatics comprising contacting in a reaction zone at an elevated pressure of from about 1 to about 20 bars and temperature of from about 200° C. to about 500° C. to provide a homogeneous gas phase, a carboxylic acid selected from C_2–C_{10} aliphatic monocarboxylic acids, C_3–C_{10} aliphatic dicarboxylic acids, aromatic carboxylic acids, and mixtures thereof, with nitrogen



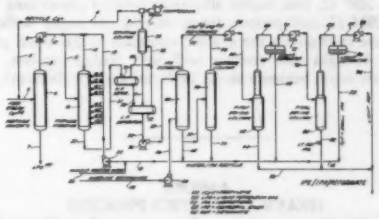
dioxide or nitric acid or both and recovering the formed nitro compound.

4,469,905

PROCESS FOR PRODUCING AND EXTRACTING C_2 TO C_6 ALCOHOLS

Texas V. Inwood, La Habra; Carlyle G. Wight, Fullerton, and Jeffery W. Koepke, La Habra, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 4, 1981, Ser. No. 318,217
Int. Cl.³ C07C *29/04, 29/86, 35/08, 31/10*
U.S. Cl. 568—899 **23 Claims**



1. A process for producing a C_2 to C_6 alcohol which comprises passing a feed stream consisting essentially of water and a C_2 to C_6 olefin through a hydration reaction zone containing a bed of hydration catalyst comprising an acidic cation exchange resin under hydration reaction conditions producing a C_2 to C_6 alcohol, wherein olefin is introduced into said reaction zone at multiple points spaced along the length of the catalyst bed, and recovering the alcohol.

4,469,906

PROCESS FOR STABILIZING EPOXIDE-CONTAINING PERCHLOROETHYLENE

Klaus Blum, Burghausen, Fed. Rep. of Germany, assignor to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 1, 1983, Ser. No. 528,453
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246886
Int. Cl.³ C07C *21/12*
U.S. Cl. 570—116 **2 Claims**

1. A process for stabilizing perchloroethylene, which contains known epoxides as stabilizing agents, comprising the step

of adding to said perchloroethylene an effective amount of a member of the group consisting of 1,2-epoxycyclooctane, 1,2-5,6-diepoxycyclooctane, and a mixture of both compounds.

4,469,907

SELECTIVE HYDROGENATION METHOD FOR HYDROCARBONS

Masashi Araki, and Yasuhiko Higashio, both of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 2, 1983, Ser. No. 471,401
Claims priority, application Japan, Mar. 2, 1982, 57-33652
Int. Cl.³ C07C 5/08
U.S. Cl. 585—259 **9 Claims**

1. A method of selectively hydrogenating highly unsaturated hydrocarbons by bringing a mixture of hydrocarbons of low unsaturated degree having 4 or more carbon atoms containing said highly unsaturated hydrocarbons into contact with hydrogen in the presence of a catalyst using a fixed bed reaction vessel, which comprises supplying said hydrogen gas in a state of piural splits along the flow direction of said fixed bed reaction vessel.

4,469,908

ALKYLATION OF AROMATIC HYDROCARBONS

George T. Burress, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 969,630, Dec. 14, 1978, abandoned.
This application Sep. 30, 1982, Ser. No. 429,600
Int. Cl.³ C07C 63/34
U.S. Cl. 585—467 **2 Claims**

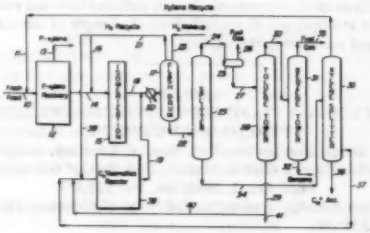
1. A process for the alkylation of aromatic hydrocarbon compounds comprising contacting the aromatic hydrocarbon with isobutylene in the presence of a crystalline zeolite alkylation catalyst, at a temperature of between about 100° C. and about 300° C., said zeolite alkylation catalyst comprising zeolite ZSM-12, said process being carried out under sufficient pressure to maintain the organic reactants in the liquid phase when brought into contact with said zeolite catalyst, said pressure being between about $10^5 N/m^2$ and $2 \times 10^7 N/m^2$.

4,469,909

HEAVY AROMATICS PROCESS

Arthur W. Chester, and Yung-Feng Chu, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 389,747, Jun. 18, 1982, abandoned.
This application Sep. 1, 1983, Ser. No. 528,683
Int. Cl.³ C07C 5/24, 5/30
U.S. Cl. 585—481 **11 Claims**



1. A process for converting to BTX a C_9+ monocyclic aromatic hydrogen distillate which boils below about 500° F., said distillate having an average content per benzene ring of about 0.5 to 3.0 alkyl groups of more than one carbon atom, which process comprises:

contacting said distillate and hydrogen with a steamed zeolite catalyst at a temperature of 650° F. to 800° F., a pressure of about 50 to 750 psig, a WHSV of about 0.5 to 30 and a hydrogen to hydrocarbon mol ratio of about 0.5 to 10, said catalyst comprising a crystalline zeolite having a Constraint Index of 1 to 12, a silica to alumina ratio of at least 12, and a platinum group metal incorporated in cationic from with said zeolite prior to final catalyst particle formation and prior to any calcination or steaming of said zeolite, said steamed catalyst having been steamed under conditions effective to reduce its alpha value by at least 25 percent.

4,469,910

METHOD FOR THE OLIGOMERIZATION OF ALPHA-OLEFINS

Frederick C. Loveless, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Sep. 8, 1983, Ser. No. 530,333
Int. Cl.³ C07C 3/21
U.S. Cl. 585—511 **5 Claims**

1. A process for oligomerizing alpha-olefins comprising contacting in a reaction zone under reaction conditions: (a) alpha-olefins having at least three carbon atoms; (b) an aluminum compound having the formula R_3Al, wherein R is an hydrocarbyl group; and (c) a cocatalyst which is hydrocarbyl halide having at least one halogen group reactive with said aluminum compound, elemental bromine or elemental iodine.

4,469,911

ISOBUTENE REMOVAL FROM C_4 STREAMS

Harold E. Manning, Houston, Tex., assignor to Petro Tex Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 199,839, Oct. 23, 1980, abandoned.
This application Nov. 8, 1982, Ser. No. 439,735
Int. Cl.³ C07C 2/24, 2/02
U.S. Cl. 585—515 **13 Claims**

1. A process for removing isobutene from a feed stream comprising predominantly C_4 hydrocarbons and containing isobutene and n-butene, said isobutene being present in an amount of from about 5 to 60 mole percent comprising:

(a) contacting said feed stream in liquid phase with a fixed bed cation exchange resin having a granular size of about 0.25 to 1 mm and heat exchange means associated therewith in a reactor at a temperature from 30° to 60° C., said feed stream being fed at a rate of a liquid hourly space velocity from about 2.5 to 12,

(b) reacting the isobutene to form oligomers thereof having number average molecular weight of C_{16} hydrocarbons or less to form a product stream comprising said C_4 hydrocarbons and oligomers and having a substantially lower amount of isobutene than said feed stream, the principal product being the dimer of isobutene, and

(c) removing said product stream from said reactor.

4,469,912

PROCESS FOR CONVERTING α-OLEFIN DIMERS TO HIGHER MORE USEFUL OLIGOMERS

Charles W. Blewett, Fort Mitchell, Ky., and Stephen W. Turner, Hamilton, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 414,691, Sep. 3, 1982, abandoned. This application Aug. 15, 1983, Ser. No. 523,256

Int. Cl.³ C07C *3/16, 3/18*

U.S. Cl. 585—525 7 Claims

1. A process for converting the dimer fraction obtained from a boron trifluoride-catalyzed oligomerization of C_{6-12} α-olefins to more highly useful oligomeric products which comprises reacting said dimer with an α-olefin having from 6 to 12 carbon atoms, the weight ratio of said dimer to said α-olefin being 5:1 to 1:5, at a temperature from 5° C. to 75° C. and pressure from atmospheric up to 100 psi and in the presence of 0.75 to 15 mole percent phosphoric acid-modified boron trifluoride catalyst, and separating the higher oligomers formed from unreacted dimer and α-olefin.

4,469,913

SELECTIVE SORPTION OF LINEAR FUSED POLYNUCLEAR AROMATIC COMPOUNDS BY ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 307,048, Sep. 20, 1981, Pat. No. 4,444,986, which is a continuation-in-part of Ser. No. 105,190, Dec. 19, 1979, Pat. No. 4,309,281. This application Jun. 6, 1983, Ser. No. 501,335

Int. Cl.³ C07C *7/13*

U.S. Cl. 585—828 14 Claims

1. A process for the selective separation of a bicyclic fused-ring polynuclear aromatic compound having a critical dimension less than 6.8 Angstrom units in admixture with another polynuclear compound having a critical dimension greater than 6.8 Angstrom units, which comprises contacting the mixture with a zeolite having a SiO_2/Al_2O_3 mole ratio of at least 12 and a Constraint Index of greater than 2 to about 12 to effect selective sorption of said bicyclic fused-ring polynuclear aromatic compound.

4,469,914
ARRANGEMENT FOR FITTING A CONNECTION BLOCK IN A COVER

Jan A. S. Petersson, Solna; Adalbert G. Schneider, Norrtälje, and Lars G. Sjöberg, Handen, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

PCT No. PCT/SE80/00311, § 371 Date Jul. 20, 1981, § 102(e) Date Jul. 20, 1981, PCT Pub. No. WO81/01773, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 3, 1980, Ser. No. 284,651

Claims priority, application Sweden, Dec. 18, 1979, 7910434

Int. Cl.³ H02G *13/08*

U.S. Cl. 174—52 R **11 Claims**

1. An arrangement in a telecommunications system comprising a cover, and a connection block fitted in said cover so that a complete connecting means is obtained, which can be connected to the front edge of a circuit board or in the back plane of a rack containing circuit boards, the connection block having holes normally utilized for receiving screws to attach the cover to the block, said cover being provided with guiding pins guidably receiving the block in the cover via the holes provided in the block normally used for screws, said cover including resilient end walls including bosses projecting inwardly into the cover, said bosses snap-engaging edges of the connection block with the block inserted into the cover, said cover further including a rear wall from which said resilient end walls project, and upper and lower walls connected to said end walls and rear wall, said cover being provided with slits to provide said end walls with the resilience thereof to enable the bosses to snap-engage the edges of the connection block.

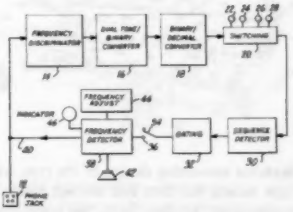
4,469,915
BEEPER SIMULATOR FOR A TELEPHONE ANSWERING APPARATUS

Jacob Lax, 1013 E. 26th St., Brooklyn, N.Y. 11210, and Sandor Goldner, 1251 46th St., Brooklyn, N.Y. 11219

Filed Sep. 20, 1982, Ser. No. 419,788

Int. Cl.³ H04M *1/65, 11/00*

U.S. Cl. 179—2 A **15 Claims**



1. A beeper simulator for simulating the beeper signal of a beeper device associated with a telephone answering apparatus, comprising:

detecting means for interconnection to a telephone line for detecting digits entered onto the telephone line by a caller representing a coded number, and

signal generating means for interconnection through the telephone line, responsive to the detection of the coded number by the detecting means, for producing onto the telephone line an output beeper signal required for operation of the telephone answering apparatus.

4,469,916
METHOD AND APPARATUS FOR DETECTING SIGNALLING AND DATA SIGNALS ON A TELEPHONE CHANNEL

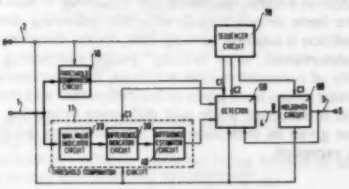
Guy de Bergh, Chatou, and Jean-Claude Spitéri, Palaiseau, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 16, 1982, Ser. No. 408,305

Claims priority, application France, Nov. 27, 1981, 81 22241

Int. Cl.³ H04M *11/06*; H04B *3/20*

U.S. Cl. 179—2 DP **13 Claims**



1. A method of detecting predetermined signals, e.g., signalling and data signals, on a telephone channel by comparing the amplitude of the signal present on the telephone channel with a threshold level, the method further comprising the steps of:

measuring the maximum values of amplitude reached by the signal present on the telephone channel during successive time windows of equal duration, said duration being at least equal to the period of the lowest frequency component in the signals to be detected or to the period of the lowest beat frequency component which may be present therein, whichever period is the longer;

calculating the differences between the maximum measured amplitude values;

comparing the absolute values of the calculated differences with at least one threshold difference; and

detecting said predetermined signals as being present each time the following detection condition is satisfied, namely: that, for the duration of a predetermined "prior activity" period comprising a plurality of consecutive time windows, said amplitude threshold level is exceeded without the difference threshold being exceeded.

8. Apparatus for detecting predetermined signals, e.g. signalling and data signals, on a telephone channel by comparing the amplitude of the signal present on the telephone channel with a threshold level, measuring the maximum values of amplitude reached by the signal present on the telephone channel during successive time windows of equal duration, said duration being at least equal to the period of the lowest frequency component in the signals to be detected or to the period of the lowest beat frequency component which may be present therein, whichever period is the longer, calculating the differences between the maximum measured amplitude values, comparing the absolute values of the calculated differences with at least one threshold difference, and detecting said predetermined signals as being present each time that said amplitude threshold level is exceeded without the difference threshold being exceeded for the duration of a predetermined "prior activity" comprising a plurality of consecutive time windows, said apparatus comprising:

amplitude comparator means connected to compare the amplitude of the signal present on the telephone channel with said threshold level,

sequencer means connected to supply sequencing signals that determine said successive time windows of equal

duration, said duration being at least equal to the period of the lowest frequency component in the signals to be detected or to the period of the lowest beat frequency component which may be present therein, whichever period is the longer;

maximum value indicator means controlled by the sequencer means to deliver the maximum value reached during each time window by the amplitude of the signal present on the telephone channel;

difference indicator means connected to calculate the differences between the maximum values delivered by the maximum value indicator means;

difference estimating means connected to compare the absolute values supplied by the difference indicator means with at least one difference threshold; and

detector means driven by the amplitude comparator means, the difference estimating means and the sequencer means, to deliver a signal indicating that signalling or data signals have been detected each time the following detection condition is satisfied, namely: that, for the duration of said predetermined "prior activity" period comprising a plurality of consecutive time windows, said amplitude comparator means have given an indication that said threshold level is exceeded while said difference estimating means have given an indication that the difference threshold is not exceeded.

4,469,917

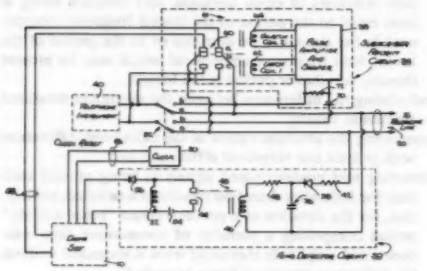
TIME SYNCHRONIZED DATA TRANSMISSION SYSTEM

Edwin F. Shelley, 339 Oxford Rd., New Rochelle, N.Y. 10804

Filed Dec. 14, 1982, Ser. No. 449,756

Int. Cl.³ H04M *11/08*

U.S. Cl. 179—2 DP **9 Claims**



1. An apparatus for coupling a telephone data set to a telephone transmission line connected to a telephone instrument so as to enable the communication of data without ringing said telephone instrument, comprising:

first means, coupled to said telephone transmission line and said telephone instrument and normally connecting said telephone instrument to said telephone transmission line, for disconnecting said telephone instrument from said telephone transmission line during a predetermined time interval; and

second means, coupled to said telephone transmission line and said data set, for detecting a first electrical signal, such as a ringing signal indicative of a call from a caller, transmitted on said telephone transmission line, without answering the call and for generating a second electrical signal when said first electrical signal on said telephone transmission line has terminated, indicating that the caller has hung up;

said data set being coupled to said second means and said telephone transmission line and being adapted to communicate data in response to the generation of said second electrical signal after said first electrical signal has terminated when said caller has hung up.

4,469,918

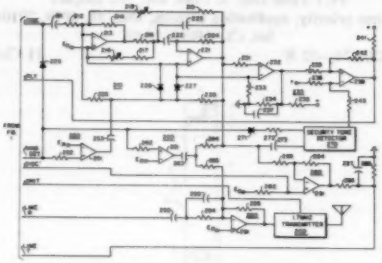
WIRELESS TELEPHONE SYSTEM WITH HIGH LEVEL DIAL PULSE SIGNALLING

Peter K. Cripps, Cranbury, N.J., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Mar. 23, 1983, Ser. No. 450,497

Int. Cl.³ H04Q *7/04*

U.S. Cl. 179—2 EA **11 Claims**



1. A wireless extension telephone system comprising: a remote unit including a signal generator operated to produce tone signals of a predetermined frequency and of a first amplitude, a dialing circuit operated to change said signals to a second amplitude and a radio transmitter operated to transmit said signals; and a base unit connected to a telephone line; a radio receiver and dial pulse detection means connected between said receiver and said line operated in response to dial pulse signals of said second amplitude received by said receiver from said remote unit, to pulse said telephone line in accordance with said received signals.

4,469,919

TELEPHONE ANSWERING DEVICE

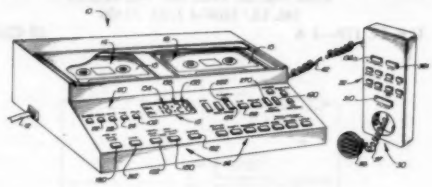
Keiichi Nakamura, Tama, and Hideyuki Horiuchi, Tokyo, both of Japan, assignors to Tandy Corporation, Fort Worth, Tex.

Filed Nov. 23, 1981, Ser. No. 324,154

Claims priority, application Japan, Feb. 20, 1981, 56-23928; Feb. 20, 1981, 56-23929; Feb. 20, 1981, 56-23930; Feb. 20, 1981, 56-23931; Mar. 23, 1981, 56-41893; Mar. 23, 1981, 56-41894; Mar. 31, 1981, 56-47688

Int. Cl.³ H04M *1/64*

U.S. Cl. 179—6.06 **8 Claims**



1. In a telephone answering device of the type which uses a recording tape which has first and second tracks to record incoming messages on the first track, the improvement comprising:

(a) first means for recording on the second track of the incoming message tape while the incoming message is being recorded on the first track, signals representing an ordinal number of the message being recorded; and

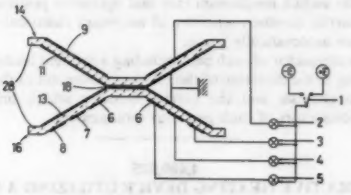
(b) second means, operative during message playback, for displaying the message number information recorded on the second track.

4,469,920

PIEZOELECTRIC FILM DEVICE FOR CONVERSION BETWEEN DIGITAL ELECTRIC SIGNALS AND ANALOG ACOUSTIC SIGNALS

Preston V. Murphy, Geneva, Switzerland, assignor to Lectret S.A., Geneva, Switzerland

Filed Jan. 26, 1983, Ser. No. 461,146
Claims priority, application France, Feb. 9, 1982, 82 02531
Int. Cl.³ H04R 17/00
U.S. Cl. 179—110 A 2 Claims



1. An acoustic transducer comprising

a plurality of metallized piezoelectric films operating as an oscillator, said films having their peripheries spaced apart and said films being each physically connected at its center region to at least one adjacent film, said films being electrically connected and their polarities selected in such a way that the films displace themselves in the same direction while electrically excited,

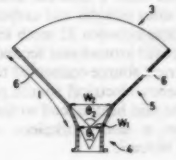
at least one surface of said films having metallized zones insulated from each other and of different sized areas, so that zones can be selectively excited by a digital electrical signal, to directly convert the digital signal into an acoustic signal of pulses modulated in amplitude.

4,469,921

HORN TYPE LOUDSPEAKER

Shozo Kinoshita, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 9, 1982, Ser. No. 356,546
Claims priority, application Japan, Mar. 17, 1981, 56-38866
Int. Cl.³ H04R 1/30
U.S. Cl. 179—115.5 H 4 Claims



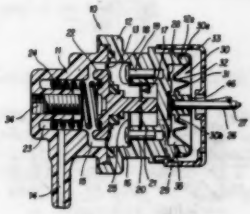
1. A horn type loudspeaker, comprising: a sectoral horn having sidewalls, a driver, a throat section having equal sized circumferential openings at its ends and connected between said horn and driver, said horn having sidewalls joining said throat section at a juncture, said sidewalls being outwardly bent in a polygonal manner so as to alter an opening angle of said horn whereby a frequency response of a directivity angle and directivity gain of said loudspeaker are selected so as to compliment an energy conversion characteristic of said driver, to render a frequency response of said loudspeaker flat.

4,469,922

PRESSURE RESPONSIVE SWITCH

Hiroaki Fukuda, Kariya, and Tsukasa Watanabe, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 27, 1982, Ser. No. 382,765
Claims priority, application Japan, Jun. 1, 1981, 56-084074
Int. Cl.³ H01H 35/34
U.S. Cl. 200—83 R 8 Claims



1. A pressure responsive switch comprising:

a casing means;

an atmospheric pressure chamber being formed in said casing means and receiving atmospheric air;

a signal pressure chamber being formed in said casing and receiving pneumatic pressure;

a diaphragm dividing said casing into said atmospheric pressure chamber and said signal pressure chamber;

an electrical switch means having a movable contact and a stationary contact being installed in said atmospheric chamber and being operated by movement of said diaphragm;

a flexible pleated cover being sealed hermetically and being adjacent said atmospheric pressure chamber and forming with said casing means a pressure maintenance chamber in communication with said atmospheric chamber through a hole in said casing means so as to maintain the pressure of said atmospheric pressure constant in accordance with a change in the temperature surrounding said atmospheric pressure chamber;

a pressure plate fixed to said diaphragm which pressure plate is movable to contact with said casing means so as to limit the contacting load of said movable contact and said stationary contact; and

a spring means for biasing said pressure plate to maintain contact between said movable contact and said stationary contact when the pressure in said signal pressure chamber is less than a preselected pressure."

4,469,923

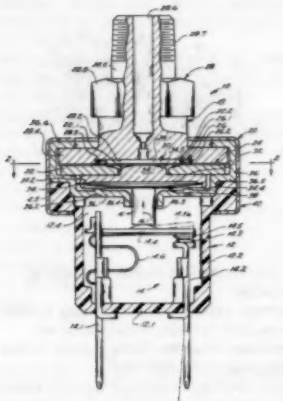
PRESSURE RESPONSIVE SWITCH WITH DISCRETE PRESSURE RESPONSIVE UNIT

Thomas J. Charboneau, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 10, 1982, Ser. No. 448,668
Int. Cl.³ H01H 35/34
U.S. Cl. 200—83 P 13 Claims

1. A pressure-responsive control device comprising base means, control means mounted on the base means and movable between first and second control positions, and snap-acting pressure-responsive means for moving the control means between said control positions in response to the application of a selected fluid pressure, characterized in that the pressure-responsive means is a discrete unit having separately testable pressure response characteristics and means mount the pressure-responsive means on the base means for moving the control means between said control positions in response to application of said selected fluid pressure, the pressure-responsive means comprising a support having an opening therein, diaphragm means disposed on the support and extending over the

opening, port means disposed on one side of the diaphragm means in sealed relation to the diaphragm means forming a sealed chamber at said one side of the diaphragm means having a passage communicating with the chamber for exposing said one side of the diaphragm means to a fluid pressure to move the diaphragm means relative to said opening in response to said pressure, snap-acting means including a dished disc element mounted at an opposite side of the diaphragm means to be



movable with snap-action between original and inverted dished configurations in response to movement of the diaphragm means when said selected fluid pressure is applied to the diaphragm means for moving the control means between said control positions, and means mounting the support and port and snap-acting means in fixed relation to each other and to the diaphragm means to form said discrete, separately testable pressure-responsive unit.

4,469,924

PORTABLE ELECTRIC POWER TOOLS

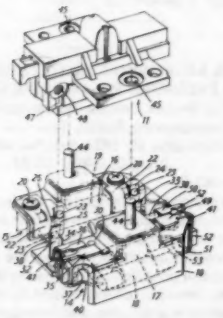
David N. W. Badcock, London, England, assignor to Kango Wolf Power Tools Limited, London, England

Filed Jan. 19, 1982, Ser. No. 341,153

Claims priority, application United Kingdom, Jan. 19, 1981, 8101502

Int. Cl.³ H01H 9/06

U.S. Cl. 200—157 **7 Claims**



1. A portable electric power tool comprising:

a double-pole main switch mechanism,

a carrier member separate from the switch mechanism,

first terminals mounted on the carrier member for the attachment thereto of electrical main supply leads,

second terminals mounted on the carrier member to which the stator leads of the motor of the tool are connected,

pairs of complementary connectors, the connectors of each pair being mounted one on the switch mechanism and the other on the carrier member, the connectors on the carrier member being respectively electrically connected to the first and second terminals,

means for locating the switch mechanism in an operative position relative to the carrier member, the connectors of each pair being so arranged that the pairs of connectors are brought into engagement by a single act of pressing the switch mechanism into said operative position on the carrier member, whereby all necessary electrical contacts are automatically made,

one connector of each pair including a resilient blade extending in the direction of the relative movement of the switch mechanism and the carrier member which brings the connectors of each pair into arrangement.

4,469,925

INDUCTIVE HEATING DEVICE UTILIZING A HEAT INSULATOR

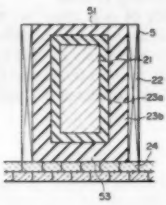
Akira Toshiro, Kagawa, and Yoshihiko Osaki, Hyogo, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Toyo Tanso Co., Ltd., Osaka, both of, Japan

Filed Apr. 5, 1982, Ser. No. 365,848

Claims priority, application Japan, Apr. 7, 1981, 56-53362

Int. Cl.³ H05B 6/24

U.S. Cl. 219—10.49 R **3 Claims**



1. An induction heating device for heating a workpiece comprised of carbon to be graphitized upon being heated, comprising:

a first heat insulating layer radially surrounding said workpiece to be heated and in close contact therewith;

a second heat insulating layer radially disposed around the periphery of said first layer and in close contact therewith, said second heat insulating layer having an electrical resistivity greater than 1 ohm-cm and being comprised essentially of a silica powder and carbon powder mixture having a grain size between 32 mesh and 100 mesh;

a heating coil disposed around said second layer; and a high frequency electrical source connected to said heating coil, said high frequency electrical source providing an alternating current to said heating coil so that a surface power density induced in said workpiece varies between 7 W/cm^2 and 20 W/cm^2.

4,469,926

SWITCHING SYSTEM IN A COMBINED MICROWAVE AND CONVECTION COOKING APPARATUS

Yoneo Komuro, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 8, 1982, Ser. No. 346,533

Claims priority, application Japan, Feb. 16, 1981, 56-21000

Int. Cl.³ H05B 6/68

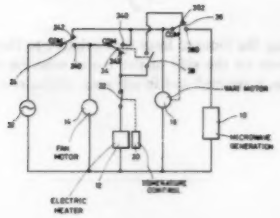
U.S. Cl. 219—10.55 B **3 Claims**

1. A combined microwave and convection cooking apparatus comprising:

microwave cooking source means for conducting a microwave cooking operation;

convection heating source means for conducting a convection cooking operation;

selection switch means including a first contact and a second contact for selectively energizing said microwave cooking source means and said convection heating source means, said first contact being connected to said microwave cooking source means, and said second contact being selectively connected to said convection heating source means;



a heater control switch operatively connected between said second contact of said selection switch means and said convection heating source means; and

a fan means being operatively connected to said heater control switch for circulating heated air;

wherein said heater control switch is closed when a mixed cooking operation is conducted and said fan means is continuously operated;

said heater control switch being opened when a microwave cooking operation is conducted without the convection cooking operation and said fan means being disengaged.

4,469,927

POWER SOURCE ARRANGEMENT FOR WIRE-CUT, ELECTRIC DISCHARGE MACHINING

Haruki Obara, Sagamihara, and Shunzo Izumiya, Hachioji, both of Japan, assignors to Fanuc Ltd., Tokyo, Japan

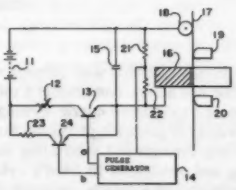
PCT No. PCT/JP82/00163, § 371 Date Jan. 5, 1983, § 102(e) Date Jan. 5, 1983, PCT Pub. No. WO82/04001, PCT Pub. Date Nov. 25, 1982

PCT Filed May 12, 1982, Ser. No. 456,060

Claims priority, application Japan, May 14, 1981, 56-72579

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 C **6 Claims**



1. An improved power source arrangement for wire-cut, electric discharge machining of the type which performs ON-OFF control of a first switching element, such as a transistor or the like, charges a capacitor when the first switching element is in the ON state, and applies a terminal voltage of the capacitor across a wire electrode and a workpiece, thereby to perform electric discharge machining of the workpiece, wherein the improvement comprises: a second switching element connected in parallel to the first switching element, for supplying current to said capacitor, said current corresponding to a leakage current across the wire electrode and the workpiece; means for detecting high, intermediate and low levels of the terminal voltage of the capacitor; and control means for turning OFF the first switching element when it is detected by the detecting means that the terminal voltage of the capacitor has reached the high level, said control means additionally including means for turning ON the second switching element when it is detected that the terminal voltage of the capacitor has dropped from the high level to the intermediate level, and means for turning OFF the second switching element and causing the ON-OFF control of the first switching element to start when it is detected that the terminal voltage of the capacitor has dropped to the low level.

4,469,928

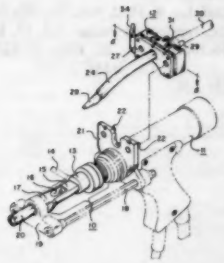
TOP LOADING DETACHABLE STUD FEEDING ASSEMBLY

Harold C. Wilkinson, Medford; Alan W. Mkitarian, Palmyra; Vito P. Navarra, Voorhees, and Francis J. Preston, Cinnaminson, all of N.J., assignors to KSM Fastening Systems, Inc., Moorestown, N.J.

Filed Jun. 11, 1982, Ser. No. 387,338

Int. Cl.³ B23K *9/20*

U.S. Cl. 219—98 **5 Claims**



1. In automatic stud welding equipment of the type employing a stud welding gun, an automatic stud chucking assembly and a stud loading assembly for delivering a stud to the stud chucking assembly, the improvements in the stud loading assembly providing for quick disconnection of the stud loading assembly from the stud welding gun and stud blockage comprising:

a stud loading tube through which studs to be loaded pass, one end of which is in communication with the stud chucking assembly and the opposite end of which is interconnected with a stud feed tube; and

a stud block and disconnect means disengagingly connected to the stud welding gun and supporting the stud loading tube in place wherein the stud block and disconnect means includes loading tube blocking means preventing movement of a stud through the stud loading tube when the stud block and disconnect means is disconnected from the stud welding gun.

4,469,929

METHOD FOR SECURING OPTICAL AND ELECTRO-OPTICAL COMPONENTS

Hans-Georg Rosen, Hohenschaeftlarn, and Julius Wittmann, Deisenhofen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 8, 1982, Ser. No. 396,338

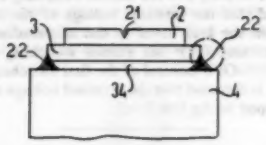
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1981, 3137441

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LD **20 Claims**

1. A method for fastening optical and electro-optical components comprising the steps of positioning a component relative to a base member by providing a base member and a weldable

support member, securing the component on the weldable support member, positioning the weldable support member relative to the base member and maintaining a gap between the



support member and the base member; then laser-welding the weldable support member to the base member by means of laser pulses.

4,469,930

THREE-DIMENSIONAL LASER CUTTING SYSTEM BY A PLAYBACK METHOD

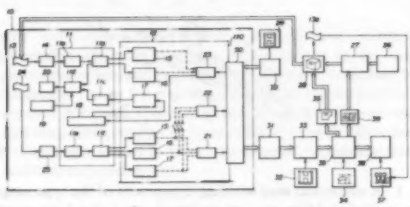
Toshio Takahashi, Shizuoka, Japan, assignor to Fuji Tool & Die Co., Ltd., Shizuoka, Japan

Filed Jul. 9, 1982, Ser. No. 396,693

Claims priority, application Japan, Jul. 17, 1981, 56-112627; Oct. 12, 1981, 56-162300; Jan. 22, 1982, 57-9238

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LN **7 Claims**



1. A three-dimensional laser cutting system by a playback method, comprising:

a three-dimensional drive machine having a main head movable in the directions of the x-axis, y-axis and z-axis, said main head being provided with three sub-heads consisting of a laser head, a high speed spindle head and a tracer head,

a laser unit disposed beside said machine,

laser beam delivery means for guiding a laser beam from said laser unit to a laser beam emission nozzle of said laser head, and

a computer having a CNC function of driving said tracer head on the basis of a two-dimensional NC tape containing data relating to the directions of the x-axis and y-axis, and a CTC function of obtaining data relating to the direction of the z-axis by scanning a line on a three-dimensional work piece, preparing a three-dimensional NC tape on the basis of said two-dimensional NC tape and said data obtained by scanning, and driving said laser head by a playback method on the basis of said three-dimensional NC tape.

4,469,931

LASER ASSISTED SAW DEVICE

John A. Macken, 4039 Shadow Hill Dr., Santa Rosa, Calif. 95404

Filed Sep. 13, 1982, Ser. No. 417,511

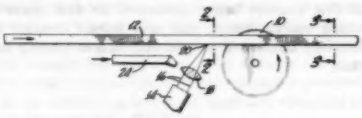
Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LG **14 Claims**

1. In a method for producing a relatively chip-free cut edge in a group of materials consisting of wood and plastic cut by a saw blade, the method comprising:

providing a laser beam;

focusing the laser beam on the surface of the wood to sufficient power density to vaporize the wood; and



translating the focused laser spot relative to the wood to cut a groove on the side of the wood wherein chip-out prevention is desired and in advance of the saw blade cut.

4,469,932

PLASMA BURNER OPERATED BY MEANS OF GASEOUS MIXTURES

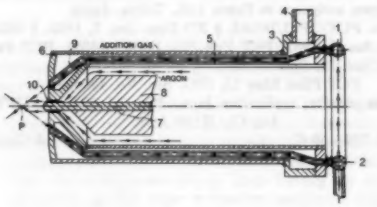
Karl Spiegelberg, Berlin; Herbert Hoffmann, Hennigsdorf; Helmfried Jeske, Hennigsdorf; Alexander Kolm, Hennigsdorf, and Fred Ebeling, Berlin, all of German Democratic Rep., assignors to VEB Edelstahlwerk, Freital, German Democratic Rep.

Continuation of Ser. No. 231,608, Feb. 5, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,374

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 221458

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PA **4 Claims**



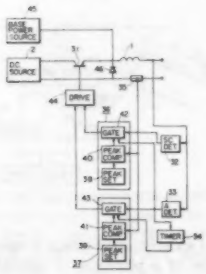
1. A plasma burner operable with gaseous mixtures for the melting of metals and alloys, comprising: a tubular body having means forming a cylindrical nozzle opening at one end and receptive of a supply of gas; a longitudinally extending rod-like cathode extending through and protruding outwardly of the nozzle opening and configured to form a cylindrical annular passage therearound which directs the nozzle flow outwardly of the tubular body and parallel to the cylindrical surface of the cathode; a ring conduit at the other end of the tubular body and receptive of a supply of an addition gas; a plurality of gas conduction pipes connected at one end to the ring conduit, extending longitudinally within the tubular body along the entire length of the tubular body and opening at said one end symmetrically on a pitch circle around the nozzle opening at an angle of from 35° to 45° with respect to the longitudinal axis of the tubular body and configured to position the point of intersection of the nozzle flow and the addition gas flow at 25 to 45 mm from the end of the cathode protruding out of the nozzle opening.

4,469,933

CONSUMABLE ELECTRODE TYPE ARC WELDING POWER SOURCE

Masanori Mizuno; Hirohisa Segawa, and Takaji Mizuno, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1982, Ser. No. 349,553
Claims priority, application Japan, Feb. 27, 1981, 56-28084
Int. Cl.[3] B23K *9/10*
U.S. Cl. 219—130.21 10 Claims



1. A consumable electrode arc welding power source for performing short-circuit transfer welding with a short circuit interval during which an electrode contacts a base material and an arc interval following said short-circuit interval during which an arc is generated between said electrode and base material, said power source including output terminals for applying welding power across said electrode and base material, a short circuit voltage occurring across said output terminals during said short-circuit interval and an arc voltage occurring across said output terminals during said arc interval, said power source comprising:

short-circuit detection means for providing an output signal in response to the occurrence of said short-circuit interval;

arc detection means for providing an output signal in response to the occurrence of said arc interval;

first pulse current generating means enabled by said short-circuit detection means output for generating a short-circuit control signal during said short-circit interval, said first pulse current generating means including a first time constant circuit means for variably setting the time constant of the rise of said first pulse current during said short-circuit interval;

second pulse current generating means enabled by said arc detection means output for generating an arc control signal during said arc interval;

a base power supply for providing a predetermined small current to said output terminals during both said short-circuit and arc intervals;

a main power supply;

a switching element connected between said main power supply and output terminals and conductive in response to a drive signal; and

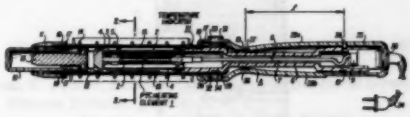
drive means responsive to either said short-circuit control signal or arc control signal for providing said drive signal to said switching element, whereby a first pulse current is applied to said output terminals during said short-circuit interval and a second pulse current is applied to said output terminals during said arc interval.

4,469,934

ELECTRICALLY HEATED HAIR CURLING BRUSH WITH SELECTIVELY ROTATABLE HANDLE

Saburo Isshiki, and Yoshinori Abura, both of Shiga, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 10, 1983, Ser. No. 456,975
Claims priority, application Japan, Jan. 15, 1982, 57-5129
Int. Cl.[3] H05B *3/40*; A45D *2/36*; A46D *7/10*
U.S. Cl. 219—222 10 Claims



1. A rotating brush cylinder hair curler comprising:

a generally cylindrical elongated handle;

an elongated brush support rotatably mounted within said handle and axially extending therefrom;

a brush cylinder non-rotatably mounted on the axial extension of said brush support;

an electric heating means housed within said brush cylinder;

means for locking the brush cylinder and handle to prevent rotation therebetween, comprising:

an elastically deformable eliptical ring surrounding the brush support and housed within the handle, said ring having at least one first engagement means on its inner surface;

at least one corresponding second engagement means on the confronting surface of the brush support portion within said eliptical ring and normally engaged with said first engagement means;

means selectively operable for deforming said eliptical ring toward a circular shape so as to disengage said first and second engagement means so as to permit the handle to rotate freely in relation to the brush cylinder and brush support.

4,469,935

COMBINED DOMESTIC USE AND SPACE HEATING ELECTRIC WATER HEATER

Francois Candela, 10639 boul. St-Michel, Montreal, Quebec, Canada

Filed Jul. 7, 1982, Ser. No. 395,985
Claims priority, application Canada, Jun. 3, 1982, 404423
Int. Cl.[3] H05B *1/02*; F24H *1/22, 7/02*
U.S. Cl. 219—314 12 Claims

1. A hot water heater for heating water for domestic use and water for space heating comprising:

(a) a tank;

(b) means for supplying water in said tank to be heated for domestic use;

(c) a first electric heating element located in the lower part of said tank for heating said water for domestic use;

(d) means for supplying water in said tank to be heated for space heating;

(e) a heating unit mounted within said tank, said unit including:

(i) first chamber means having openings for allowing said water for domestic use to circulate therethrough;

(ii) a second electric element in said first chamber means;

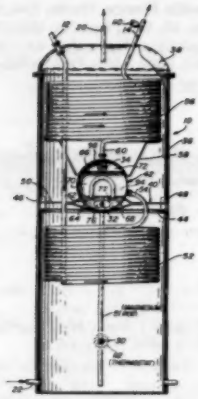
(iii) second closed chamber means for receiving the water supplied in said tank for space heating;

(iv) heat exchange means in said second closed chamber means in heat collecting communication with said first chamber means;

(v) third closed chamber means in fluid communication with said second closed chamber means;

(vi) a third electric heating element in said third chamber means;

(f) means for collecting heated space heating water from said third chamber means and for supplying that water for use; and



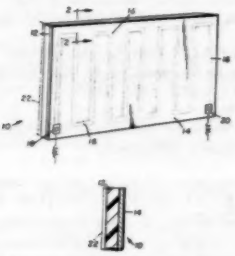
(g) means for collecting from said tank and supplying heated water for domestic use.

4,469,936

HEATING ELEMENT SUITABLE FOR ELECTRIC SPACE HEATERS

James B. Hunter, Newton Square, Pa., assignor to Johnson Matthey, Inc., Malvern, Pa.

Filed Apr. 22, 1983, Ser. No. 487,759
Int. Cl.³ H05B 3/16
U.S. Cl. 219—543 11 Claims



1. An element for generating heat energy by the application of electrical energy thereto comprising:

an electrically nonconductive substrate;

an electrically nonconductive ceramic material coated on at least one surface of said substrate, said ceramic material containing finely divided metallic particles dispersed therein; and

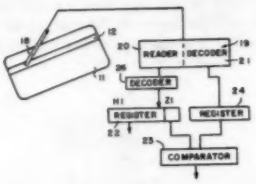
means establishing a burnished path on the surface of said ceramic material to render said ceramic material electrically conductive along said path so that when said electrical energy is applied to said path, current will be conducted along said path and heat will be generated by virtue of the electrical resistance thereof.

4,469,937

METHOD OF SECURING DATA

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Str. 36, D-7730 Villingen, both of Fed. Rep. of Germany

PCT No. PCT/DE80/00129, § 371 Date May 8, 1981, § 102(e) Date Apr. 29, 1981, PCT Pub. No. WO81/00776, PCT Pub. Date Mar. 19, 1981
Continuation of Ser. No. 261,196, May 8, 1981, abandoned. This PCT application Sep. 8, 1980, Ser. No. 509,330
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936409
Int. Cl.³ G06K 19/08
U.S. Cl. 235—435 5 Claims



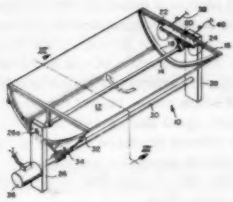
1. The method of securing data which is recorded on a data support in the form of a pluralitiy of individual characters adapted for automatic reading, characterized in that after recording the characters on the data support, selected ones of the said individual characters are detected with respect to their physical properties and additional data is recorded on the data support comprising additional information of the detected, physical properties of the selected ones of said recorded characters and additional information on the position of the selected characters.

4,469,938

SOLAR TRACKING UNIT

Eli Cohen, 350 Continental Ave., Paramus, N.J. 07652

Filed Aug. 18, 1983, Ser. No. 524,200
Int. Cl.³ G01J 1/20
U.S. Cl. 250—203 R 13 Claims



1. A solar collector tracking system comprising:

a parabolic reflector;

an energy absorption tube provided above and across said parabolic reflector, said energy conversion tube having an energy absorption fluid flowing therethrough;

a frame provided on at least one end of said parabolic reflector;

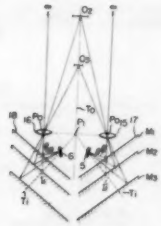
one photovoltaic cell provided on either side of said energy absorption tube, said cells directed downward toward said parabolic reflector and said cells supported by said frame on one transverse side of said parabolic reflector; and

tracking control means for following the path of the sun and controlling the position of said parabolic reflector with respect to the sun solely determined by the signals produced by said photovoltaic cells.

4,469,939
DISTANCE MEASURING APPARATUS

Ken Utagawa, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 324,990
Claims priority, application Japan, Dec. 1, 1980, 55-169285
Int. Cl.³ G01J 1/36
U.S. Cl. 250—204 10 Claims

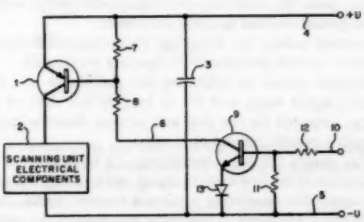


1. A distance measuring apparatus including first and second imaging lenses for forming images of the same object, a first photoelectric device having a light-receiving surface for receiving the first image by said first imaging lens, a second photoelectric device having a light-receiving surface for receiving the second image by said second imaging lens, and varying means for varying the length of the optical path between said first imaging lens and said light-receiving surface of said first photoelectric device and the length of the optical path between said second imaging lens and said light-receiving surface of said second photoelectric device so that when the object and said light-receiving surface of said first photoelectric device are brought into a conjugate relation with respect to said first imaging lens, the object and said light-receiving surface of said second photoelectric device are brought into a conjugate relation with respect to said second imaging lens, the path lengths, together, representing the distance to the object.

4,469,940
SWITCHING APPARATUS FOR ABSOLUTE POSITION MEASURING DEVICE

Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,374
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049261
Int. Cl.³ H01J 40/14
U.S. Cl. 250—214 R 10 Claims



1. In an absolute position measuring device comprising a coded scale; a scanning unit for reading the coded scale, said scanning unit comprising a plurality of electrical components; means for generating a switching signal; and means for generating a supply voltage between a pair of voltage supply terminals, the improvement comprising:

means for connecting the electrical components of the scanning unit across the voltage supply terminals;

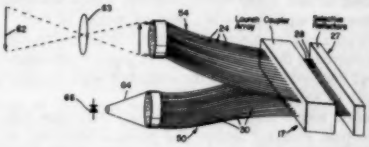
at least a capacitor connected across the voltage supply terminals in parallel with the electrical components; and

a switching element, included in the connecting means in series with the electrical components and in parallel with the capacitor, responsive to the switching signal to selectively apply the supply voltage to and interrupt the supply voltage from the electrical components.

4,469,941
PARALLEL-IN, SERIAL-OUT FIBER OPTIC IMAGE SCANNER

John P. Palmer, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Mar. 15, 1982, Ser. No. 358,498
Int. Cl.³ H01J 5/16; G02B 5/16
U.S. Cl. 250—227 19 Claims



1. A fiber optic image scanning system comprising:

a plurality of unidirectional fiber optic couplers; each having an input fiber, a bidirectional fiber, and an output fiber and being effective to couple light signals from the input fiber unidirectionally to the bidirectional fiber in a first direction of light transmission with light tranversing the bidirectional fiber in a reverse direction being directed to the output fiber;

means for applying light signals to the input fibers;

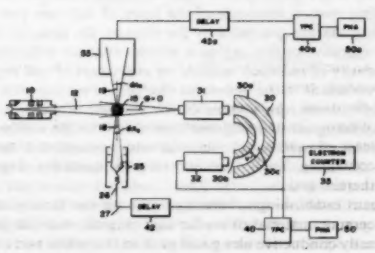
selectively reflective means positioned adjacent the ends of the bidirectional fibers; and

means for detecting light reflected from the selectively reflective means and transmitted to the termination of the output fibers for developing an electrical signal corresponding to the serial scanning of the applied light signals.

4,469,942
MEANS AND METHOD FOR CALIBRATING A PHOTON DETECTOR UTILIZING ELECTRON-PHOTON COINCIDENCE

Santosh K. Srivastava, La Canada, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 15, 1982, Ser. No. 358,088
Int. Cl.³ G01J 1/42; G01D 18/00
U.S. Cl. 250—252.1 24 Claims



1. An arrangement for calibrating a photon detector of a known input solid angle to determine its efficiency to particu-

lar photons in a selected region of the spectrum, the arrangement comprising:

means for directing a beam of electrons of a predetermined energy, definable as xeV in a first direction;

means for directing a beam of selected atoms in a direction perpendicular to said first direction, whereby when electrons of said beam collide with said atoms, at least some of the atoms are excited to emit said particular photons of known wavelength radiation, definable as nÅ, and the electrons exciting said atoms lose a known amount of energy, definable as yeV and scatter with an energy of zeV where $z=(x-y)$, said zeV electrons scattering in directions which form different angles definable as θ with a direction aligned with the direction of the electron beam;

a photon detector positioned with its input solid angle in a direction in which photons are emitted, including nÅ photons which were emitted as a result of collisions of some of said atoms with electrons, which scattered in a direction wherein $\theta=m°$, with an energy of ZeV;

electron analyzer means positioned for receiving electrons scattered in the direction of $\theta=m°$ and for separating from said received electrons the electrons with remaining energy of zeV; and

selection means responsive to the zeV electrons from said electron analyzer means and photons detected by said photon detector for providing a count of the number of zeV electrons from said electron analyzer means and for providing a separate count of only those nÅ photons detected by said photon detector which were emitted as a result of collisions which resulted in said zeV electrons scattered in the direction of $\theta=m°$.

4,469,943

PYROELECTRIC DETECTOR

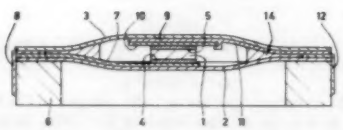
Andrew A. Turnbull, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,852

Claims priority, application United Kingdom, Jun. 5, 1981, 8117310

Int. Cl.³ G01J *5/00*

U.S. Cl. 250—338 **17 Claims**



1. A pyroelectric detector comprising an element of pyroelectric material having at least one pair of opposed faces for generating electrical charges at the two faces of said one pair when the temperature of the element changes, electrode means extending over at least one of the faces of said one pair for detecting charges generated by the element, the detector having an operative surface region in which variations with time in the intensity of radiation incident on every part of said region cause variations in the generated charges detectable with the electrode means, the volume of the element of pyroelectric material being substantially less than would be the volume of an element of pyroelectric material which extended over the whole of said region and which had a thickness equal to the smallest spacing between the faces of said at least one pair, and thermal diffusion means extending to the element from parts of said region remote therefrom for supplying thermal energy to the element from radiation incident on said remote parts, and wherein the thermal capacitance of the thermal diffusion means is substantially less than the thermal capacitance of the element.

4,469,944

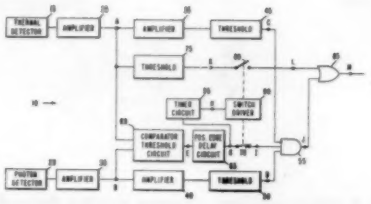
OPTICAL DISCRIMINATING FIRE SENSOR

Mark T. Kern, Goleta, and Robert J. Cinzori, Santa Barbara, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Nov. 20, 1981, Ser. No. 323,334

Int. Cl.³ G08B *17/12*

U.S. Cl. 250—339 **36 Claims**



1. A fire sensor system for making energy dissipation comparisons while sensing hydrocarbon fires and explosions above predetermined power thresholds, the system comprising:

(a) low threshold radiation channel means responsive to minimum power fires or explosions for generating a first group of control signals;

(b) high threshold radiation channel means responsive to fires or explosions which exceed a predetermined power threshold for generating a first override control signal; and (c) circuit means coupled to both the first group of control signals and the first override control signal for simulating, in response to said first group of control signals, an explosion by generating a timing signal representative of the duration of said explosion of causing said first override control signal to control the triggering of an output signal during the generation of said timing signal and for causing said first group of control signals to control the triggering of an output signal when said first override control signal is not controlling the triggering of an output signal.

27. A system for suppressing fires and explosions comprising:

(a) a first means for detecting electromagnetic energy within a first predetermined spectral waveband;

(b) a second means for detecting electromagnetic energy within a second predetermined spectral waveband;

(c) inhibition means for inhibiting the generation of a first control signal when and for as long as the ratio of the energy detected by the first and second detector means exceeds a predetermined ratio value;

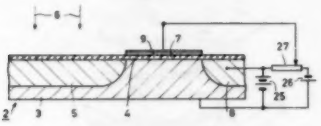
(d) delay means for both continuing the inhibition of the generation of the first control signal and enabling a threshold means for generating a second control signal, for a predetermined period of time after the ratio of the energy detected by the first and second detector means returns to a value below the predetermined ratio value; and

(e) wherein the threshold means will generate the second control signal when and for as long as the energy detected by the second detector means exceeds a predetermined threshold level and simultaneously the delay means enables the threshold means.

4,469,945
DEVICE FOR DETECTING RADIATION AND SEMICONDUCTOR DEVICE FOR USE IN SUCH A DEVICE

Arthur M. E. Hoeberechts, and Gerard E. van Rosmalen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 15, 1982, Ser. No. 358,542
Claims priority, application Netherlands, Jul. 10, 1981, 8103304
Int. Cl.³ G01T *1/29*; H01L *27/14*
U.S. Cl. 250—370 **24 Claims**

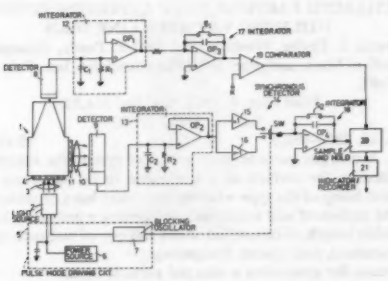


1. A device for detecting radiation comprising a semiconductor device having a semiconductor body with a major surface and at least one radiation-sensitive element at said surface which can be exposed to radiation to be detected, said radiation-sensitive element comprising sub-elements for converting radiation to be detected into generated charge, characterized in that the sub-elements are suitable for storing the generated charge and are each connected, via a current path comprising an electrically-controllable barrier, to a detector which is common to at least a plurality of sub-elements, the common detector receiving a signal when the amount of generated charge stored in at least one of the sub-elements exceeds a threshold value dependent on the barrier level.

4,469,946
FLUORESCENT GAS ANALYZER

Masaru Tanaka; Naoki Noguchi, and Kozo Ishida, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Apr. 7, 1982, Ser. No. 366,417
Claims priority, application Japan, Apr. 24, 1981, 56-62723
Int. Cl.³ G01J *1/42*
U.S. Cl. 250—373 **7 Claims**



1. A fluorescent gas analyzer for measuring the concentration of fluorescent components contained in a gaseous sample, said analyzer comprising:

a sample chamber for holding said gaseous sample;

a light source which is optically connected to said sample chamber for applying radiant energy of a first wavelength range to said sample held within said sample chamber;

a pulse mode driving circuit operatively electrically connected to said light source for causing said light source to repeatedly generate light flashes;

a first optical detector for detecting radiant energy of said first wavelength range emitted from said light source and passing through said sample and for generating electric signals corresponding to said detected radiant energy;

a second optical detector for detecting fluorescent radiant energy of a second wavelength range emitted from said sample placed in said sample chamber and for generating an electric signal corresponding to said fluorescent detected radiant energy;

a first circuit means operatively electrically connected to said first optical detector and including a first integrator for integrating electric signals which are output from said first optical detector during the duration of each flash of said light source and for discharging a voltage corresponding to said integrated electrical signals from said first optical detector during the intervals between the flashes of said light source and a second integrator operatively connected to said first integrator for continuously integrating an output thereof and including a comparator means for comparing an output of said second integrator with a predetermined value and producing an output signal representative of said comparison;

a second circuit means operatively electrically connected to said second optical detector and including a third integrator for integrating electric signals which are output from said second optical detector during the duration of each flash of said light source and for discharging a voltage corresponding to said integrated electric signals from said second optical detector during said intervals between the flashes of said light source and a fourth integrator operatively connected to said third integrator for continuously integrating an output thereof;

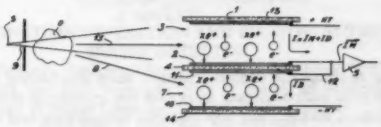
a sample and hold circuit for integrating separately and repeatedly voltage signals which are output from said second circuit means by each flash of said light source, and for sampling and holding the value of the integration of voltage signals corresponding to said second wavelength range in response to said comparator means output signal when the value of the integration of voltage signals corresponding to the first wavelength range reaches said predetermined value;

and an indicating and/or recording means for indicating and/or recording said value output by said sample and hold circuit.

4,469,947
X-RAY DETECTOR WITH COMPENSATING SECONDARY CHAMBER

Robert Allemand, Saint Ismier; Jean-Jacques Gagelin, Vinay, and Edmond Tournier, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 2, 1982, Ser. No. 365,081
Claims priority, application France, Apr. 15, 1981, 81 07568
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—385 **8 Claims**



1. An X-ray detector for detecting rays having passed through an object and being furnished by a source emitting towards the object a plane beam of incident X-rays, said beam having a wide angular aperture and being of small thickness, said detector comprising at least one main ionization chamber containing at least one gas ionizable by the said beam and, in this chamber, a plate for collecting the charges resulting from ionization of the gas, this plate being parallel to the plane of the beam of incident rays and being taken to a first potential, and a series of flat electrodes for collecting the charges resulting from ionization of the gas, these electrodes being taken to a

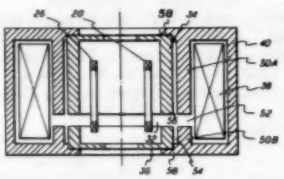
second potential and being directed towards the source, in a plane parallel to the plane of the beam of incident rays opposite the charge collecting plate, these electrodes each defining an elementary detection cell and respectively furnishing a current which is the sum on the one hand of a measuring current proportional to the quantity of charges obtained by the ionization of the gas opposite each electrode under the effect of the X-rays passing through the object, in directions corresponding to those of the incident rays and, on the other hand, of a scattering current resulting from ionization of the gas by rays diffused in directions other than those of the incident rays, wherein said X-ray detector comprises a secondary ionization chamber coupled to said main chamber to compensate the scattering current, and wherein said secondary ionization chamber contains the same ionizable gas as said main ionization chamber and comprising a series of charge collecting electrodes mounted parallel to and respectively connected to said electrodes of said main ionization chamber and being taken to the same second potential close to zero, and secondary ionization chamber further comprising a charge collecting plate substantially parallel to the first-mentioned charge collecting plate located opposite said charge collecting electrodes of said secondary chamber and taken to a third potential, of sign opposite the first potential, the ionization of the gas in said secondary ionization chamber being produced by the X-rays diffused by the object.

4,469,948

COMPOSITE CONCENTRIC-GAP MAGNETIC LENS

Lee H. Veneklasen, Castro Valley, and William J. DeVore, Hayward, both of Calif., assignors to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Jan. 26, 1982, Ser. No. 342,696
Int. Cl.³ H01J 3/22
U.S. Cl. 250—396 ML 9 Claims



1. A composite magnetic particle beam lens having deflection coils and comprising more than one cylindrical inner pole pieces of magnetically soft material, surrounding said deflection coils and separated by a lens gap, said lens further including,

an excitation lens coil outside and surrounding said inner pole pieces,

an outer return yoke of magnetically soft material surrounding said excitation lens coil,

said magnetically soft material of said yoke being different from the magnetically soft material of said inner pole pieces, and

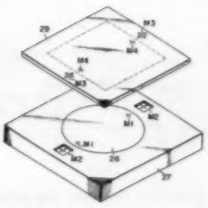
a means for shunting any excess flux from said excitation lens coil around said inner pole pieces to maintain the desired magnetic field within the inner pole pieces.

4,469,949

ELECTRON BEAM PATTERN TRANSFER DEVICE AND METHOD FOR ALIGNING MASK AND SEMICONDUCTOR WAFER

Ichiro Mori, Kodaira; Kazuyoshi Sugihara; Toshiaki Shinozaki, both of Yokohama, and Toru Tojo, Yamato, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,724
Claims priority, application Japan, May 7, 1981, 56-68532
Int. Cl.³ H01J 37/00
U.S. Cl. 250—491.1 12 Claims



10. A method for aligning a photocathode mask pattern and a semiconductor wafer supported on a holder thereof in an electron beam pattern transfer device comprising the following steps:

detecting a relative distance L_1 between a first mark provided on the semiconductor wafer and a second mark provided on the surface of the wafer holder;

determining a distance L_2 between a third mark provided on the pattern mask and a reference provided on the pattern mask;

projecting images of the third mark from said pattern mask onto said wafer holder;

adjusting the relative position of the second mark and the projected third mark so that the relative distance between said marks is equal to the difference between the distance L_1 and the distance L_2 so that the reference position, as projected on the wafer holder, are aligned.

4,469,950

CHARGED PARTICLE BEAM EXPOSURE SYSTEM UTILIZING VARIABLE LINE SCAN

Norman J. Taylor, Wenham, and Paul F. Petric, Swampscott, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 4, 1982, Ser. No. 354,822
Int. Cl.³ H01J 37/00
U.S. Cl. 250—492.2 10 Claims

1. A charged particle beam exposure system for selectively irradiating the surface of a workpiece to be patterned, said system being of the type wherein said beam has a cross-section at the surface of said workpiece comprising a projected line of variable length, of controlled width and one of two orthogonal orientations, said system comprising:

means for generating a charged particle beam;

aperture plate means, including aperture means positioned for illumination by said charged particle beam, operative to shape said charged particle beam so as to provide said beam with a cross-section comprising two generally orthogonal elongated figures, each of said elongated figures comprising at least one pair of adjacent orthogonal edges;

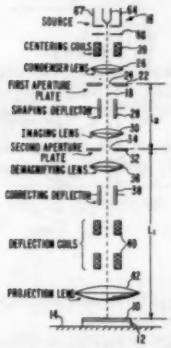
a shaping aperture plate having a shaping aperture with two adjacent orthogonal edges;

means interposed between said aperture plate means and said shaping aperture plate for focusing an image of said elongated figures onto said shaping aperture plate;

means for deflecting said image of said elongated figures relative to the orthogonal edges of said shaping aperture so as to provide an intermediate line of desired length,

width and orientation, said intermediate line being defined at any instant of time by the portion of said image of said elongated figures which is superimposed on said shaping aperture;

means for projecting a demagnified image of said intermediate line onto said workpiece, thereby forming said projected line at the surface of said workpiece; and



means for directing said projected line to any specified position on the surface of said workpiece,

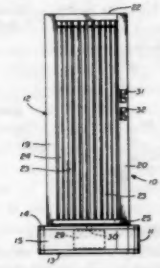
whereby said aperture plate means limits charged particle beam current and thereby provides reduced beam spreading and improved resolution of said projected line.

4,469,951

METHOD AND APPARATUS FOR TANNING OR UV TREATMENT

Eugene E. Coco, and Willie L. Scott, both of 804 Central Ave., Hot Springs, Ark. 71901

Filed Sep. 30, 1982, Ser. No. 431,628
Int. Cl.³ A61N *5/06*
U.S. Cl. 250—494.1 **20 Claims**



1. A method of tanning or treatment with ultraviolet radiation which comprises

providing a source of artificial ultraviolet radiation extending vertically for a distance of about the height of the person or object being irradiated and extending arcuately in closely spaced relation,

providing a motor powered turntable in juxtaposition to said source of artificial ultraviolet radiation and having its center positioned substantially equidistant from said radiation source and unobstructed on the side away from said radiation source for safe exit therefrom while in operation,

energizing said source of artificial ultraviolet radiation for a selected period of time,

positioning an individual or object to be irradiated on said turntable, and

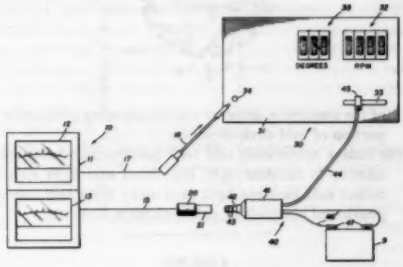
energizing the motor of said turntable to rotate the same for a selected period of time.

4,469,952

ADAPTER FOR DIESEL-ENGINE-TIMING METER

Gene E. Olson; Thomas P. Becker, and Donald D. Grover, all of Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed May 28, 1982, Ser. No. 383,009
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **18 Claims**



1. An adapter enabling use of a spark-ignited engine calibrator to calibrate a diesel-engine-timing meter, the diesel timing meter including an optical detector for producing an electrical signal in response to light developed during combustion in a diesel engine, the optical detector being carried by a detector housing, a magnetic probe for producing a signal indicative of a top dead center event, a display for engine speed, and a display for the amount of timing angle, the calibrator including means for generating at a terminal a series of first pulses, means for generating at a jack a series of second pulses, the jack being constructed to receive the magnetic probe, a first selector for establishing the angle between corresponding first and second pulses, and a second selector for establishing the frequency of the pulses, said adapter comprising inductive means adapted to be clipped onto the terminal for supplying a series of inductive signals in response to the series of first pulses, rectifier means coupled to said inductive means for supplying a flash voltage substantially at the inception of each inductive signal, a light source coupled to said rectifier means and being responsive to the flash voltages therefrom to flash, and an adapter housing constructed to mate with the detector housing, said light source being mounted in said adapter housing and arranged to direct the flashes toward the optical detector.

4,469,953

COMBINATION IONIZATION AND PHOTOELECTRIC SMOKE DETECTOR

Takao Fujisawa, Saitama; Masayoshi Saito, Kanagawa; Kohei Yamada, and Seiji Tsubouchi, both of Tokyo, all of Japan, assignors to Nittan Company, Limited, Tokyo, Japan

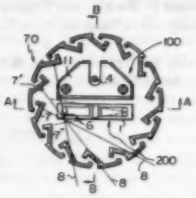
Filed Feb. 2, 1982, Ser. No. 344,989
Int. Cl.³ G01N *21/26*
U.S. Cl. 250—574 **5 Claims**

1. In a smoke detector of the type including a dark chamber of labyrinth structure consisting of a generally cylindrical lateral wall comprised of a plurality of angled lamina members, a closure plate, a base plate, and a photoelectric smoke detector located within said dark chamber, the improvement comprising:

the incorporation into said smoke detector of an ionization smoke detector, said dark chamber being formed from an electrically conductive plastics material and providing an outer electrode of said ionization smoke detector; and,

the further improvement comprising said photoelectric detector and elements of said ionization chamber that are positioned within said dark chamber being positioned in spaced relationship;

a light emitting source of said photoelectric detector positioned in non-illuminating relationship with said elements



of the ionization detector and illuminating an interior wall portion of said dark chamber;

the lamina comprising said wall portion each being angled relative to incident light rays from said light source to reflect said incident light rays away from said internally positioned elements of said ionization detector.

4,469,954

MOVABLE SUBSTATION

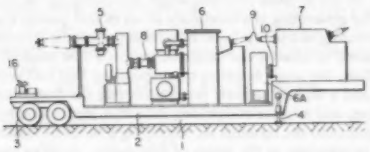
Shigeto Machara, Nishinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 4, 1982, Ser. No. 439,207

Claims priority, application Japan, Nov. 24, 1981, 56-174808[U]

Int. Cl.³ H02B *5/04*

U.S. Cl. 290—1 A **2 Claims**



1. A movable substation comprising: a movable truck frame, substation equipment carried on said frame, a generator having a prime mover coupled therewith for supplying electric power to said substation equipment for the starting thereof and a relay unit for detecting whether said substation equipment has started or not and to supply electric power to a load wherein said relay unit connects said generator to said substation equipment when electric power cannot be supplied from said substation equipment to said load, and disconnects said generator from said substation equipment when electric power can be supplied from said substation equipment to said load, and connects said substation equipment to said load.

4,469,955

FLOAT WITH MEANS FOR COMPENSATING FOR TIDE HEIGHT DIFFERENCES

John A. Trepl, II, 1691 Mesa Dr., #F-13, Costa Mesa, Calif. 92707

Division of Ser. No. 241,659, Mar. 9, 1981, Pat. No. 4,379,235. This application Mar. 30, 1983, Ser. No. 480,356

Int. Cl.³ F03B *13/12*

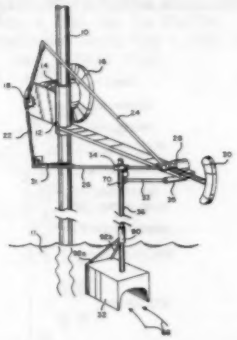
U.S. Cl. 290—53 **22 Claims**

1. A float for responding to wave currents comprising:

(a) a buoyant float body adapted to be partially submerged;

(b) at least one fin means depending from said body;

(c) said body having on its underside an inclined surface whose upper end is generally adjacent one end of said fin means and whose lower end is generally adjacent the



other end of said fin means, said upper end being higher than said lower end; and

(d) means arranged to support said float for pivotal movement about a generally vertical axis.

4,469,956

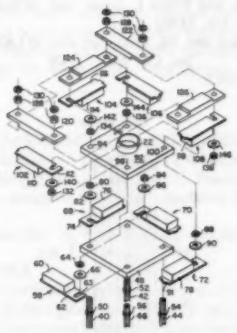
WINDMILL SUPPORT STRUCTURE

Richard D'Amato, Sudbury, Mass., assignor to U.S. Windpower, Inc., Burlington, Mass.

Filed Jan. 24, 1983, Ser. No. 460,655

Int. Cl.³ F03D *5/04*; H02P *9/04*

U.S. Cl. 290—55 **4 Claims**



1. A windmill installation comprising:

A. a windmill including a rotatably mounted turbine and a generator operationally connected to the turbine for driving thereby and for generation of electric power upon connection to a power grid when the rotational frequency of said turbine is equal to or greater than a predetermined turbine synchronous frequency, said turbine including a plurality of turbine blades, a given rotational position thereby being passed by a turbine blade at least at a blade synchronous frequency, equal to the turbine synchronous frequency multiplied by the number of turbine blades, when said generator is generating power;

B. a windmill support tower supporting said windmill and including a platform on which said windmill is mounted, a multiplicity of legs connected to said platform and extending downward therefrom, a base associated with each of said legs and connected thereto, and a leg compliance

member associated with each of at least a plurality of said legs, each leg compliance member providing the connection of its associated leg to the base associated therewith, said compliance members having enough compliance that the natural frequency of translational bending of said windmill installation is less than the blade synchronous frequency.

4,469,957

RESETTING CIRCUIT FOR MICROPROCESSORS

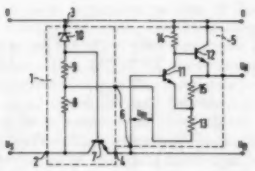
Tilmann Krüger, Neunkirchen, and Heinz Effenberger, Herpersdorf, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 339,874

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103489

Int. Cl.³ H02H *11/00*

U.S. Cl. 307—200 A 2 Claims



1. In a resetting circuit for microprocessors for the formation of reset signals in dependence upon an operating voltage conducted to the microprocessor which is supplied by the operating voltage; and said circuit including a stabilization circuit for the reduction of a supply voltage to a constant operating voltage; the improvement comprising: a flip-flop for delivering the reset signal; means for applying a control voltage to said flip-flop, said control voltage being proportional to the differential voltage between the supply voltage and the operating voltage; said flip-flop including a hysteresis between switching points for a rising and reducing control voltage; means actuating said flip-flop when the differential voltage generally corresponds to the difference between the operating voltage and a minimum permissible supply voltage; said flip-flop being reset when the supply voltage has again reached a predeterminable percentage of its rated value, said flip-flop comprising a plurality of transistor stages, including an input transistor controlled by said control voltage, and a switching transistor coupled with said input transistor whereby, in response to a change in the switching condition of the input transistor, said switching transistor changes is switched condition and wherein said second change displaces the operating point of said input transistor, and the base of said input transistor is connected with the operating voltage output of the voltage stabilization circuit, and a voltage divider having a first pick-up connected with said flip-flop input, said pick-up being switchable between the supply voltage and a reference voltage, and the collector of said input transistor being connected through a collector resistor with the reference voltage, the emitter of said input transistor being conducted through an emitter resistor to the first pick-up of the voltage divider, the emitter of the switching transistor being connected through a coupling resistor with the emitter of the input transistor, the base of the switching transistor being connected between the collector of the input transistor and the collector resistor thereof, the collector of the switching transistor being connected with the reference voltage, and the resetting signal appearing between the collector and emitter of the switching transistor.

4,469,958

ELECTRICAL CIRCUIT FOR ABSOLUTE POSITION MEASURING DEVICE

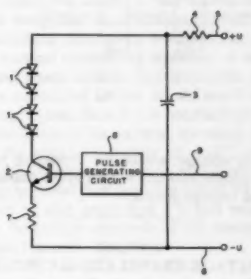
Walter Schmitt, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,363

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049262

Int. Cl.³ G06G *7/12;* H03K *17/56*

U.S. Cl. 307—246 13 Claims



1. In an absolute measuring device comprising a coded scale; a scanning unit for reading the coded scale, said scanning unit comprising a code generator which includes a plurality of electrical components; means for generating a brief duration switching signal; and means for generating a supply voltage between a pair of voltage supply terminals, the improvement comprising:

means for connecting the electrical components of the scanning unit across the voltage supply terminals, said connecting means comprising a switch which is controlled by the switching signal and is connected in series with the electrical components;

at least one capacitor connected across the voltage supply terminals in parallel with the electrical components to continuously maintain a charge on the capacitor; and

a resistor included in the connecting means in series with the parallel circuit of the capacitor and the electrical components, to form with the capacitor an RC circuit with an RC time constant substantially greater than the duration of the switching signal;

said improvement effective to reduce the peak current supplied by the means for generating the supply voltage to a value substantially less than the peak current through the electrical components.

4,469,959

INPUT BUFFER

Kevin Luke, and Robert N. Allgood, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 15, 1982, Ser. No. 357,547

Int. Cl.³ H03K *5/02, 19/092*

U.S. Cl. 307—264 4 Claims

1. A circuit for translating an input signal having a range of voltage levels to an output signal with a different range of voltages comprising:

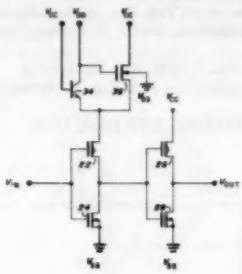
a terminal for receiving an input signal having a plurality of possible states;

an inverter comprising a pair of MOS transistors of opposite conductivity type, with the drains of the MOS transistors connected together and forming an output node and the input of the inverter coupled to the terminal;

a first voltage source and a second voltage source;

transistor means for coupling one of said MOS transistors to the first voltage source; and

bypass means for coupling said one of said MOS transistors to the first voltage source, said bypass means responsive to



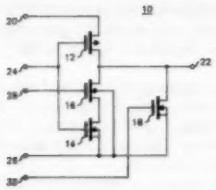
the second voltage source for bypassing said transistor means to couple said one of said MOS transistors directly to the first voltage source.

4,469,960

VOLTAGE TRANSLATING CIRCUIT

Kuppuswamy Raghunathan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 7, 1982, Ser. No. 395,958
Int. Cl.³ H03K *5/00*
U.S. Cl. 307—264 **2 Claims**



1. A voltage translating circuit comprising:

a first field effect transistor having a source region of a first conductivity type coupled to a first operating voltage node, a drain region of the first conductivity type coupled to an output node, a current channel region of a second conductivity type between the source and drain regions thereof and coupled to the first operating voltage node, and a gate electrode adjacent to but insulated from the current channel region thereof and coupled to a first input node;

a second field effect transistor having a source region of the second conductivity type coupled to a second input node, a drain region of the second conductivity type, a current channel region of the first conductivity type between the source and drain regions thereof and coupled to the second input node, and a gate electrode adjacent to but insulated from the current channel region thereof and coupled to the first input node;

a third field effect transistor having a source region of the second conductivity type coupled to the drain region of the second transistor, a drain region of the second conductivity type coupled to the output node, a current channel region of the first conductivity type between the source and drain regions thereof and coupled to the second input node, and a gate electrode adjacent to but insulated from the current channel region thereof and coupled to a third input node; and

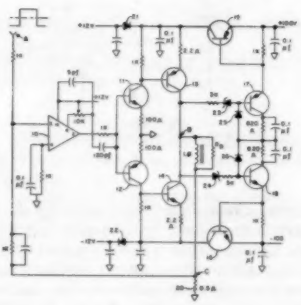
a fourth field effect transistor having a source region of the second conductivity type coupled to the second input node, a drain region of the second conductivity type coupled to the output node, a current channel region of the first conductivity type between the source and drain regions thereof and coupled to the second input node, and a gate electrode adjacent to but insulated from the current channel region thereof and coupled to a second operating voltage node.

4,469,961

FAST SWITCHING DRIVER FOR INDUCTIVE LOAD, SUCH AS A PHASE SHIFTER

Walter E. Milberger, Severna Park, and Stephen F. Payer, Linthicum, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 29, 1982, Ser. No. 403,214
Int. Cl.³ H03K *3/01, 3/26*
U.S. Cl. 307—270 **11 Claims**



1. A driver for rapidly switching the current level in an inductor, said driver comprising a linear loop and a nonlinear loop for supplying current to said inductor;

wherein the linear loop comprises a control circuit, at least one linear amplifying device coupling a low voltage source to the inductor, and sense means for sensing the current in the inductor, the control circuit having input means coupled to an input command terminal and to the sense means, the linear amplifying device having an input terminal coupled to the control circuit, operative to supply current to the inductor as specified by an input signal at the command terminal, and responsive to a change of the input signal, the linear amplifying device goes to a low impedance so that the voltage at the inductor changes rapidly;

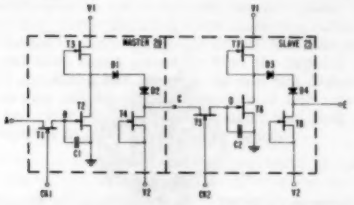
wherein the nonlinear loop comprises at least one nonlinear amplifying device coupling a high voltage source to the inductor, threshold means coupled between the linear loop and an input terminal of the nonlinear device, blocking diode means coupled between the nonlinear loop and the linear loop, the nonlinear amplifying device being normally off and operative in response to a given threshold voltage across the threshold means when the voltage changes in the linear loop to bias the nonlinear amplifying device on to a low impedance state to apply said high voltage to the inductor, with the blocking diode means being effective to protect the low voltage source from the high voltage, the nonlinear amplifying device being turned off when the voltage across the threshold means falls below the given value as the current in the inductor approaches the commanded steady state value.

4,469,962

HIGH-SPEED MESFET CIRCUITS USING DEPLETION MODE MESFET SIGNAL TRANSMISSION GATES

David E. Snyder, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 26, 1981, Ser. No. 315,334
Int. Cl.³ H03K 19/096, 19/20, 17/687; G11C 19/28
U.S. Cl. 307—450 11 Claims



8. A circuit comprising:

(a) a logic element responsive to data of first and second negative voltage potentials, said logic element having a depletion mode MESFET data input gate; and

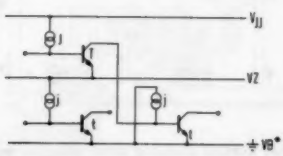
(b) a depletion mode MESFET transmission gate operatively associated with said data input gate for enabling the selective serial transmission of data therethrough to said logic element in response to clock signals of third and fourth negative voltage potentials, the pinch-off threshold voltage potential of said data input gate being between approximately said first and second negative voltage potentials, the pinch-off threshold voltage potential of said transmission gate being between approximately said third and fourth negative voltage potentials, said third negative voltage potential being approximately equal to or more negative than said second negative voltage potential, said first negative voltage potential being more positive than said second negative voltage potential, and said fourth negative voltage potential being more negative than said third negative voltage potential.

4,469,963

MONOLITHICALLY INTEGRATED SEMICONDUCTOR CIRCUIT INCLUDING I^2L CELLS AND OTHER CIRCUIT PARTS

Walter Umkehrer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 212,507, Dec. 3, 1980,. This application Sep. 2, 1983, Ser. No. 528,993
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949201
Int. Cl.³ H03K 19/091
U.S. Cl. 307—477 5 Claims



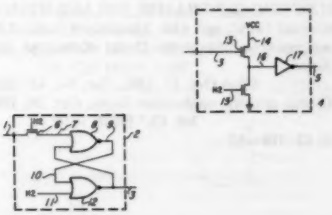
1. In a monolithically integrated semiconductor circuit, comprising a first supply voltage terminal and a second supply voltage terminal (said second supply voltage terminal carrying the reference potential for the circuit) a plurality of I^2L cells each respectively forming a vertical transistor having base, emitter and collector electrodes and an injector having an input, said first and said second supply voltage terminals being connected to each other by a chain consisting of said I^2L cells directly disposed adjacent each other in serially stacked connection, the chain including a first I^2L cell and a last I^2L cell, the first I^2L cell having the input of the injector thereof connected to said first supply voltage terminal, the last I^2L cell of said chain having the emitter electrode of the vertical transistor thereof connected to said second supply voltage terminal, and in each pair of directly adjacent I^2L cells of said chain the emitter electrode of the vertical transistor of the I^2L cell connected closer to said first supply voltage terminal being directly conductively connected to the input of the injector of the I^2L cell connected closer to said second supply voltage terminal, said integrated semiconductor circuit further comprising a controlling connection between the collector electrode of the vertical controlling transistor of an I^2L cell belonging to said chain and the base electrode of the vertical transistor of a controlled further one of said I^2L cells, which does not belong to said chain but is conductively connected at the emitter electrode of its vertical transistor to the emitter electrode of the vertical transistor of an I^2L cell, which belongs to said chain but lies closer in said chain to the second supply voltage terminal than said controlling I^2L cell, the input of the injector of said controlled I^2L cell being exclusively connected to the emitter electrode of the vertical transistor of said controlled I^2L cell.

4,469,964

SYNCHRONIZER CIRCUIT

Karl M. Guttag, Houston, Tex., and James Carey, Oakley, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 20, 1981, Ser. No. 285,207
Int. Cl.³ H03K 17/30, 19/095, 3/286
U.S. Cl. 307—481 6 Claims



1. A digital synchronizer for connecting to a synchronous system to prevent the propagation of a metastable condition, the synchronizer comprising:

latch means comprising a first and second transistor logic gate connected as a S-R flip flop for storing voltage levels representative of logic states applied to the digital synchronizer, the first transistor logic gate has a beta ratio substantially higher than the beta ratio of the second transistor logic gate; and

a level sensitive circuit means operatively connected to the latch means for producing an output upon reception of a predetermined input voltage level greater than the metastable voltage of the storage means.

4,469,965

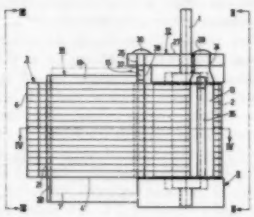
ELECTRIC MOTOR STATOR ASSEMBLY

Merowech Eckel, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1983, Ser. No. 539,882
Claims priority, application Austria, Oct. 7, 1982, 3708/82
Int. Cl.³ H02K 1/12
U.S. Cl. 310—254 7 Claims

1. An electric motor comprising an U-shaped laminated

stator-core, whose two limbs each carry an exciter winding, a rotor mounted on a motor shaft, and two bearing shield by means of which the motor shaft is journalled and which serve as mounting devices for the motor, characterized in that one bearing shield is provided with at least three sword-shaped projections which extend perpendicularly to the bearing shield, at least two projections, which relative to the motor shaft are arranged substantially opposite each other, enclose the outer sides of the two limbs of the laminated stator core, a third projection is arranged between the two limbs of the



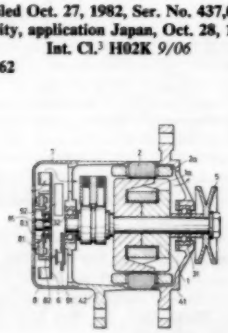
laminated stator core at a location adjacent the rotor, the second bearing shield is formed with openings of a shape corresponding to the shape of the projections, through which openings the free ends of said projections extend and are secured from the outer side of said bearing shield, and the third projection is provided with a T-shaped member whose longitudinal limb extends from the third projection between the exciter windings and whose transverse limb is positioned from the inner side against the yoke which interconnects the two limbs of the laminated stator core.

4,469,966

ELECTRIC GENERATOR FOR USE WITH VEHICLES

Yoshiyuki Iwaki, and Akio Matsumoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1982, Ser. No. 437,050
Claims priority, application Japan, Oct. 28, 1981, 56-173547
Int. Cl.³ H02K *9/06*
U.S. Cl. 310—62 **6 Claims**



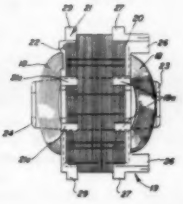
1. An electric generator, comprising: a rotor mounted on a rotary shaft and having field coils, a stator opposed to said rotor with a slight radial gap therebetween and having armature coils generating a three phase AC output upon rotation of said rotor, driving means mounted at one end of said rotary shaft, an induction motor comprising a stator and an induction member formed as a rotor mounted on a further shaft on the side of said generator opposite said driving means, means responsive to a portion of said three phase AC output induced in said armature coils for rotationally driving said induction motor, a cooling fan disposed on said rotor of said induction motor for supplying cooling air to said generator stator and said generator rotor.

4,469,967

ELECTRIC MOTOR COIL-RETAINING MEANS

Keith J. Grierson, and Eugene H. Mokrzycki, both of Ramsey County, Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 7, 1982, Ser. No. 386,183
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—71 **11 Claims**



1. In an electric motor having a laminated core defining an end face, and a housing member adjacent said end face, the improvement comprising:

an annular coil retainer extending fully along the periphery of the core end face, said coil retainer having a first portion outwardly facially juxtaposed to said core end face and a transversely outwardly offset second portion extending about the periphery of the core inwardly of said end face, said housing member having a portion facially abutted directly to said core end face adjacent said retainer offset portion;

a coil wound on said core and having a portion retained by said retainer; and

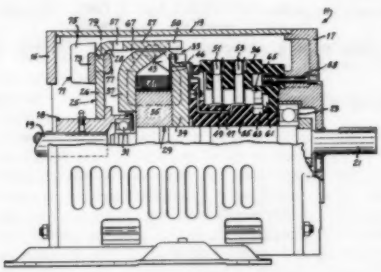
securing means for securing said housing member directly to said core in the facially abutted relationship and with said first portion of the coil retainer clamped between the housing member and core.

4,469,968

COOLING SYSTEM FOR DYNAMOELECTRIC MACHINE

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 1, 1983, Ser. No. 510,007
Int. Cl.³ H02K *49/02*
U.S. Cl. 310—105 **14 Claims**



1. An eddy current coupling comprising an input member, an output member rotatable relative to said input member about an axis of rotation, a pole assembly associated with one of said input and output members, an inductor member associated with the other of said input and output members, a field coil associated with said pole assembly for coupling said input and output members upon energization of said field coil, said

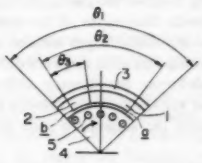
field coil when energized establishing a flux path from said field coil, through said pole assembly, through said inductor member and back through said pole assembly to said field coil, said inductor member including a generally cylindrical drum portion extending substantially parallel to said axis of rotation and a radially extending portion extending substantially perpendicular to said axis of rotation, and a heat dissipating member integrally formed from heat conductive material attached to said radially extending portion of said inductor member, said heat dissipating member including a heat dissipating surface on one side thereof for directing heat from said heat dissipating member and rivet means extending from the opposite side thereof for connecting said integrally formed heat dissipating member to said radially extending portion of said inductor member, said rivet means acting to transfer heat from said inductor member to said heat dissipating member.

4,469,969

PERMANENT MAGNET FIELD TYPE STARTING MOTOR PROVIDED WITH AN AUXILIARY

Tosio Tomite, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,212
Claims priority, application Japan, Mar. 17, 1981, 56-38999
Int. Cl.³ H02K *21/28*
U.S. Cl. 310—154 **12 Claims**



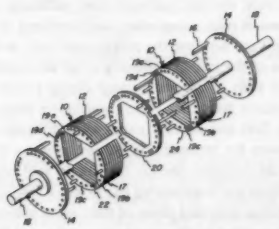
1. In a permanent field type starting motor including a yoke, a permanent magnet disposed in the circumferential direction of the yoke, an auxiliary pole made of a magnetic material having higher reversible permeability than that of the permanent magnet, the auxiliary pole being juxtaposed with and close to the permanent magnet and disposed on the magnetizing side of the armature reaction relative to the pole center, the improvement wherein the auxiliary pole has a pole arc ratio ranging from 0.07 to 0.4 with respect to the center angle of the field and is formed of a non-permanent magnetic material.

4,469,970

ROTOR FOR PERMANENT MAGNET EXCITED SYNCHRONOUS MOTOR

Thomas W. Neumann, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,352
Int. Cl.³ H02K *21/12*
U.S. Cl. 310—156 **17 Claims**



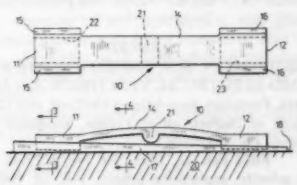
1. A multi-pole rotor for a synchronous motor comprising:
a central rotor shaft having a longitudinal axis;
a stack of thin laminations disposed in planes perpendicular to said axis and forming a plurality of subassemblies, said subassemblies comprising the respective poles of the rotor, said thin laminations having high magnetic permeability, said subassemblies being disposed circumferentially around said shaft with circumferentially adjacent subassemblies separated from one another by axially extending interpolar regions of low magnet permeability, said poles having a circumferential surface;
magnetic means associated with said plurality of subassemblies or producing magnet flux which flows through the circumferential surface of the poles of the rotor;
at least one strength lamination for dividing said stack in the axial direction into substacks comprised of high permeability material, said strength lamination having a planar configuration which substantially conforms to that of said laminations, said strength lamination having interpolar bridge portions with a cross-sectional area sufficiently small to minimize interpole flux leakage and to hold the subassemblies against centrifical force, said strength lamination defining an aperture therethrough for said magnet means; and
means for retaining the thin laminations, between strength laminations, extending axially along said lamination stack from at least one strength lamination to the next, through aligned openings in said stack.

4,469,971

STATOR SLOT WEDGE ASSEMBLY WITH AXIAL SPRING RETAINER

Victor A. Moore, Peterborough, Canada, assignor to Canadian General Electric Company, Ltd., Toronto, Canada

Filed Jun. 27, 1983, Ser. No. 508,176
Claims priority, application Canada, Nov. 18, 1982, 415888
Int. Cl.³ H02K *3/48*
U.S. Cl. 310—214 **12 Claims**

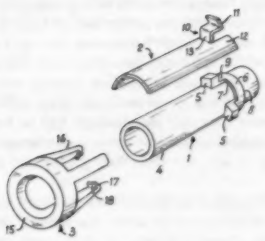


1. A wedge assembly for a dynamoelectric machine having a stator core comprising a stack of laminations in which radial conductor-receiving slots are provided extending axially of said machine, each slot having a dove-tail configuration adjacent the slot opening, comprising:
a pair of ends having complementary surfaces to said dove-tail configuration for insertion into the dove-tail configuration across said slot opening with said complementary surfaces engaging dove-tail surfaces,
a central spring section extending between said pair of ends and being restrained from flexing action at said ends,
said central spring section having a width less than the width of said slot opening, and having a central part of greater thickness than the ends thereof, and,
wedge means for insertion beneath at least said central part for engaging said central part and flexing said central spring section outwardly to provide an inwardly directed spring force.

4,469,972
COMMUTATOR FOR A MINIATURE ELECTRIC MOTOR

Marc Rampignon, Villemomble, and Claude Chevance, Savigny sur Orge, both of France, assignors to Compagnie Industrielle des Mecanismes, Levallois Perret, France

Filed Mar. 21, 1983, Ser. No. 477,110
Claims priority, application France, Mar. 23, 1982, 82 04898
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—233 **6 Claims**

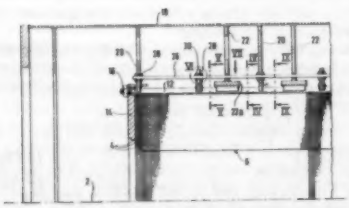


1. In a commutator for a miniature electric motor comprising: an insulating core for mounting on a shaft of a rotor of the motor and having a cylindrical outer surface; a plurality of conductive sectors applied against a portion of said surface, each sector having at a rear end thereof a terminal which projects radially of the core and is cut out from a portion of the width of the sector and defines at least one tab which projects from a base of the terminal axially of the core, said tab ensuring the circumferential positioning of the sector; and a ring structure for retaining the sectors against the core; the improvement comprising projections which are circumferentially spaced apart and project from the cylindrical surface of the core, said tabs being inserted between said projections, said ring structure having claws and said core having, on a side of the projections axially remote from said portion of said cylindrical outer surface, a flange of smaller radial height than said projections and behind which flange hook the claws of the retaining ring structure, which claws extend between said projections.

4,469,973
RESILIENTLY SUSPENDED STATOR FOR A DYNAMO-ELECTRICAL SYNCHRONOUS MACHINE

Jean Guyot, Fontaine; Jean-Michel Guillard, and Germain Bauchet, both of Belfort, all of France, assignors to Alsthom-Atlantique, Paris, France

Filed Feb. 16, 1983, Ser. No. 467,044
Claims priority, application France, Feb. 18, 1982, 82 02675
Int. Cl.³ H02K *1/18, 15/14*
U.S. Cl. 310—258 **6 Claims**



1. A resiliently suspended stator for a dynamo-electrical synchronous machine, said stator having a longitudinal axis and comprising:

a magnetic circuit constituted by an axial succession of rings made up of magnetic laminations and disposed co-axially about said longitudinal axis;

conductor windings extending axially in grooves made in the inside cylindrical surface of the magnetic circuit;

assembly rods spaced angularly around and extending longitudinally along the cylindrical outside surface of the magnetic circuit, with a radially inner portion of each rod being dove-tailed into each ring of the magnetic circuit;

axial tightening means for axially tightening the magnetic circuit;

a casing disposed coaxially about the stator outside the magnetic circuit, said casing comprising an outer cylindrical sheath with annular stiffening rings axially spaced along the inside of the sheath and welded thereto;

legs fixing the casing to a support structure external thereto;

resiliently flexible suspension rods extending parallel to the assembly rods and spaced angularly around the magnetic circuit outside the assembly rods, each suspension rod being provided with fixing points disposed at intervals therealong, with alternate fixing points being fixed to the magnetic circuit via the assembly rods and to the casing via its annular stiffening rings;

an axial succession of floating annular stiffening rings disposed coaxially around the magnetic circuit and located between the stiffening rings of the casing thereby avoiding any increase in the outside dimensions of the stator, the floating stiffening rings having inside edges welded to the assembly rods so that the floating stiffening rings are deformed when the magnetic circuit deforms, the floating stiffening rings also being welded to the suspension rods, thereby constituting said fixing points between the suspension rods and the magnetic circuit;

the stiffening rings of the casing projecting radially inwardly past the suspension rods up to the vicinity of the assembly rods in such a manner as to ensure great rigidity;

the improvement wherein:

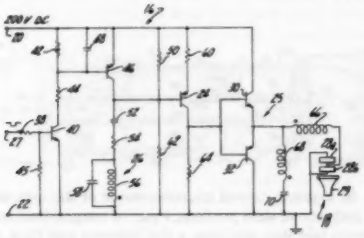
at least some of the stiffening rings of the casing are provided with respective cylindrical reinforcing flanges which are coaxial with the stator and which are welded to the inside edges of said rings, each flange being fitted with a plurality of pairs of rotation-lim³ting stops angularly spaced around the magnetic circuit with the stops of each pair being located on respective sides of a corresponding assembly rod in such a manner as to limit the extent to which the magnetic circuit can accidentally rotate in either direction due to an electrical fault, thereby putting a limit on the angular displacement which the flexible suspension rods need to be able to withstand under fault conditions;

and wherein the stiffening rings fitted the rotation-limiting stops, have slots through which the suspension rods pass without being fixed thereto and which are sufficiently large to avoid contact between said stiffening rings and the suspension rods, even when deformations of the magnetic circuit are bending the suspension rods, and wherein other ones of the casing stiffening rings are welded to the suspension rods to constitute said fixing points between the suspension rods and casing stiffening rings; thereby providing first and second paths with different dynamic chracteristics for transmitting forces between the assembly rods and the outer sheath: the first of said paths damping vibrations and comprising the floating stiffening rings, the suspension rods and those of the casing stiffening rings which are welded to the suspension rods; and the second of said paths transmitting extra forces created under fault conditions and comprising the rotation limiting stops and those of the casing stiffening rings which are fitted with said stops.

4,469,974
LOW POWER ACOUSTIC FUEL INJECTOR DRIVE CIRCUIT

Donald Speranza, Canton, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 14, 1982, Ser. No. 388,400
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—316 15 Claims

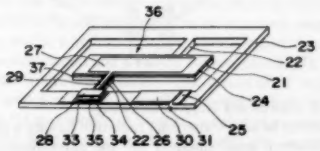


1. An acoustic fuel injector system comprising:
a mechanically resonant injector structure responsive to an alternating current excitation signal to meter and atomize fuel supplied thereto;
oscillator circuit means for producing an alternating current excitation signal;
a reactive circuit element corresponding in value to a substantially static electrical property of the injector structure;
means for applying the excitation signal to the injector structure and to the reactive circuit element;
first feedback means electrically connecting the structure to the oscillator for tuning the frequency of the excitation signal to the resonant response frequency of the structure;
and second feedback means electrically connecting the reactive circuit element to the oscillator for cancelling the effect of the static electrical property of the structure from the excitation signal frequency.

4,469,975
PIEZOELECTRIC VIBRATOR DEVICE INCLUDING VIBRATOR ELEMENT AND FRAME OF UNITARY CONSTRUCTION

Takeshi Nakamura, Uji, and Hiroshi Nishiyama, Muko, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 6, 1983, Ser. No. 456,309
Claims priority, application Japan, Jan. 7, 1982, 57/1513
Int. Cl.³ H01L *41/18*
U.S. Cl. 310—321 3 Claims

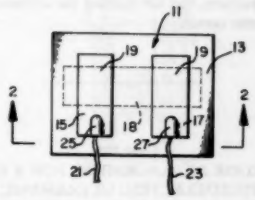


1. A piezoelectric vibrator device, comprising:
a vibrating element, a support frame surrounding the vibrating element and supporting the vibrating element by means of at least two support arms protruding inwardly of said support frame and terminating integrally with said vibrating element, said vibrating element, said support frame, and said support arms being of one-piece construction fabricated from a sheet of elastic invariable metal;
a layer of aluminum formed on a portion of said vibrating element;
a first layer of ZnO formed on said aluminum layer;
a second layer of ZnO formed on a first portion of said support frame;
a first electrode formed on said first ZnO layer such that said first electrode, said first ZnO layer, said aluminum layer and said vibrating element form a piezoelectric vibrator;
a second electrode formed on said second ZnO layer such that said portion of said support frame, said second ZnO layer and said second electrode define a static capacitance; and
a capacitor chip mounted to said support frame at a location which is spaced from said first capacitor and electrically connected to said first electrode.

4,469,976
SINGLE-SIDE CONNECTED TRANSDUCER

William R. Scott, Doylestown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1982, Ser. No. 395,546
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—334 1 Claim



1. A transducer device comprising:
a piezoelectric substrate consisting essentially of polyvinylidene fluoride;
a pair of discrete plate electrodes disposed on one side only of said substrate and formed to provide a metal-free border about the edge of said substrate;
a conductive metal plate formed on the other side of said substrate, opposite of and overlapping said plate electrodes, thereby forming an active transducer area between said plate electrodes, said conductive metal plate being formed to provide a metal-free border about the edge of said substrate;
a pair of electrical wire leads each respectively connected to said plate electrodes and displaced from said active transducer area and constituting the only external electrical connections to the transducer; and
nonconductive adhesive fixedly interposed between each of said wire leads and said substrate whereby said wire leads are affixed to said substrate.

4,469,977
SUPERLATTICE ULTRASONIC WAVE GENERATOR

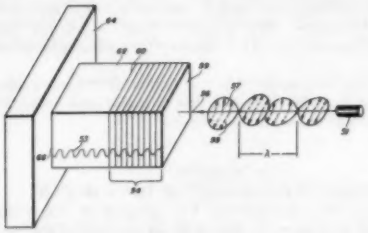
John J. Quinn, North Scituate, R.I.; Ulrich Strom, Hyattsville, Md., and Leroy L. Chang, Goldens Bridge, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 19, 1982, Ser. No. 435,156
Int. Cl.³ H01L *27/14*
U.S. Cl. 310—334 13 Claims

1. An ultrasonic wave generator for generating ultrasonic waves to be guided into an acoustic system comprising:
a body of material with at least a portion thereof extending in one direction that includes a semiconductor superlattice structure, said superlattice structure having a periodic variation in the electronic character of the semiconductor

material along the length thereof in said one direction for a plurality of spatial periods, thereby resulting in a periodic variation in the net space charge density in said superlattice;

means for generating a coherent far-infrared beam which is



directed along said one direction, such that a transient electric field perpendicular to said one direction is applied to said superlattice portion;

means for guiding the ultrasonic wave away from said superlattice structure, and for guiding the ultrasonic wave into the acoustic system.

4,469,978

ELECTRODE ARRANGEMENT FOR A FOLDED POLYMER PIEZOELECTRIC ULTRASONIC DETECTOR

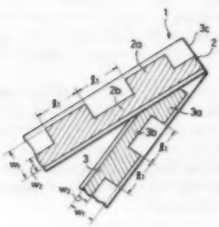
Akira Hamada; Akira Funakoshi, and Keiichi Ohira, all of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,616

Claims priority, application Japan, Sep. 6, 1982, 57-154781

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—366 **5 Claims**



1. An ultrasonic detector wherein electrodes are formed on front and rear surfaces of a high polymer piezoelectric film, such that opposing electrode portion and nonopposing electrode portions are alternately and continually formed, most parts of the electrodes on the front and rear surfaces being opposed to each other through said piezoelectric film at said opposing electrode portions, most parts of said electrodes on the front and rear surfaces of said film which are different from the most parts of the electrodes at said opposing electrode portions being shifted from each other at said nonopposing electrode portions so as to have substantially no capacitance, and said piezoelectric film is wound around a base in an even number of layers such that said opposing electrode portions overlap each other and said nonopposing electrode portions overlap each other.

4,469,979

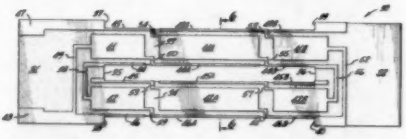
MICRORESONATOR OF DOUBLE-ENDED TUNING FORK CONFIGURATION

Shih S. Chuang, Irvine, Calif., assignor to Statek Corporation, Orange, Calif.

Filed May 27, 1983, Ser. No. 498,768

Int. Cl.³ H01L *41/04*

U.S. Cl. 310—370 **11 Claims**



1. In a quartz crystal microresonator of the type including first and second stem portions, a pair of integral tines extending between said stem portions, a slot between said tines, said slot having opposed crotches where said tines join said stem portions, and a plurality of electrodes mounted on each of said tines, spaced along the length thereof, said electrodes being adapted for receipt of an AC voltage for causing said tines to oscillate, the improvement wherein the crystal orientation is (ZYw) θ and said electrodes are mounted onn said tines such that the polarity of the electrodes changes along the length of the tines at points derived by determining where the second derivative of the lateral displacement of the tines with respect to length changes polarity.

4,469,980

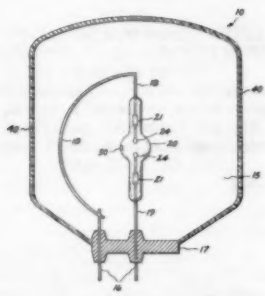
FLUORESCENT LAMP WITH NON-SCATTERING PHOSPHOR

Peter D. Johnson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,710

Int. Cl.³ H01J *61/44*

U.S. Cl. 313—25 **3 Claims**



1. A fluorescent lamp comprising:

a source of near ultraviolet radiation having a wavelength of between approximately 280 and approximately 350 nanometers comprising an evacuable ultraviolet light-transmissive envelope having electrodes disposed at either end thereof and containing therein an ionizable medium including a halide selected from the group consisting of copper halide, magnesium halide, rhenium halide, and silver halide; and

a shell at least partially surrounding said ultraviolet source, said shell comprising a material transmissive to visible radiation, and to ultraviolet radiation having a wavelength between approximately 280 and approximately 400 nanometers, said shell being substantially optically homoge-

nous and containing at least one phosphor for absorbing said ultraviolet radiation and reradiating light at different frequencies, said shell having embedded therein at least one phosphor having an index of refraction selected to be slightly different from the index of refraction of said shell.

4,469,981

CIRCUIT FOR THE OPERATING OF GAS DISCHARGE LAMPS

Reinhard Ruff, Feldkirchen; Friedrich Haydn, Deutschlandsberg, both of Austria, and Horst Ebhardt, Graz, all of Austria, assignors to Elektro Neon Elger Ges.m.b.H. Dr. H. Ebhardt and H. Stark and H. Ebhardt

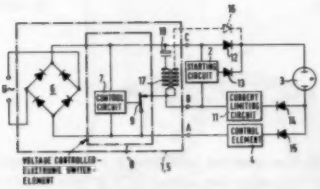
PCT No. PCT/AT81/00022, § 371 Date Apr. 30, 1982, § 102(e) Date Apr. 30, 1982, PCT Pub. No. WO82/01113, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 10, 1981, Ser. No. 380,862

Claims priority, application Austria, Sep. 11, 1980, 4581/80

Int. Cl.³ H05B *41/16*

U.S. Cl. 315—205 **13 Claims**



1. A circuit for the operating of gas discharge lamps, particularly fluorescent tubes, in which the gas discharge lamp is connected to a source of current, particularly a source of direct current, a starting circuit for starting the lamp and having a starter transformer as well as a source of auxiliary voltage which can be disconnected from the lamp after starting being provided for the starting of the gas discharge lamp, characterized by the fact that as the source of current there is provided a full-wave rectifier (6) with a connection via a control element (4) to the lamp and to which rectifier (6) there are connected in parallel a capacitor circuit and a switch control circuit (7), said capacitor circuit comprising a series combination of a charging capacitor (10) with a switch contact (9) actuated by said switch control circuit (7) in response to voltage developed across said rectifier, the charging capacitor (10) supplying the operating voltage for the gas discharge lamp (3) and being recharged to a voltage by successive closures of the switch control (9), and the full-wave rectifier (6) serving as source of auxiliary voltage for the gas discharge lamp (3), which, after the starting of the gas discharge lamp (3), can be disconnected via the control element (4), developed in particular as a semiconductor switch element, and by the fact that the starting circuit (2, 17) is connected to the charging capacitor (10) and that the secondary winding of the starter transformer (17, 17*a*) is connected to the gas discharge lamp (3) separately from the operating circuit of said lamp.

4,469,982

ELECTRON-BEAM TUBE

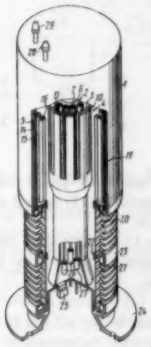
Vladimir I. Perevodchikov; Pavel I. Akimov; David A. Skibityansky; Valentina N. Shapenko; Lev V. Loginov; Alexandr L. Shapiro; Arkady N. Yakovlev, all of Moscow, and Vitaly M. Kosmachevsky, Reutovo Moskovskoi, all of U.S.S.R., assignors to Vsesojuzny Energeticheskiy Institut Imeni, V.I. Lenina, Moscow, U.S.S.R.

PCT No. PCT/SU80/00146, § 371 Date Apr. 19, 1982, § 102(e) Date Apr. 19, 1982, PCT Pub. No. WO82/00734, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 27, 1980, Ser. No. 373,485

Int. Cl.³ H01J *1/46, 21/10*

U.S. Cl. 313—293 **2 Claims**



1. An electron-beam tube comprising several components arranged coaxially and disposed in succession one after another downstream the electron flow: a sectionalized cathode provided with a near-cathode focusing electrode; a control electrode made as several rods; and a cylindrical chamber anode whose chambers are formed by ribs and perpendicular anode surfaces located opposite the emitting portions of the cathode, characterized in that the tube comprises a protective electrode (4); that an additional rib (16) is set in front of, and orthogonally relative to each rib (15) of the chamber (13) of the anode (5); that the butt ends of adjacent additional ribs (16) form an input slot (17) for the electron flow produced by the cathode (2) made in the form of a plurality of tapes (6) arranged in the longitudinal direction of the tube; that the control electrode (3) is made in the form of a pair of rods (10) and surrounded by the protective cylindrical electrode (4) galvanically connected to said sectionalized cathode (2), the width of each tape (6) of the cathode (2), geometrical dimensions of each chamber (13) of the anode (5) and the distance between the tapes (6) of the cathode (2), the rods (10) of the control electrode (3) and the ribs (16) of the chamber (13) of the anode (5) being selected in accordance with the following relationships:

$$a/b=c/d;\ 1<d/c\leq 10;\ e\geq b,$$

wherein

a is the width of the tape (6) of the cathode (2);

(b) b is the width of an input slot (17) of the electron flow of the chamber (13) of the anode (5);

(c) c is the distance between the tape (6) of the cathode (2) and the rods (10) of the control electrode (3);

d is the distance between the rods (10) of the control electrode (3) and the ribs (16) of the chamber (13) of the anode (5); and

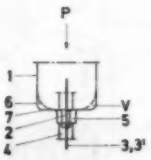
e is the depth of the chamber (13) of the anode (5).

4,469,983

ELECTRIC LAMP WITH AN ENVELOPE SEAL DESIGNED AS PINCH SEAL, AND A DEVICE AND METHOD FOR ITS MANUFACTURE

Helmut Grahmann, Friedberg; Dieter Hofmann, Augsburg, and Alfred Wacker, Friedberg, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,036
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112821
Int. Cl.³ H01J 5/38; H01K 1/38
U.S. Cl. 313—318 20 Claims



1. Integral lamp envelope—pinch seal structure comprising an electric lamp envelope (1) having an end portion of circular cross section;
two lead-in wires (3, 3') extending into the lamp envelope;
a filament (9) extending between the lead-in wires internally of the envelope;
and a pinch seal (2) forming a holding seal for the lead-in wires (3, 3') and closing off the envelope,
wherein the structure comprises, in accordance with the invention,
a terminating surface (7) integral with the end portion of the envelope, and located in a plane at right angles to the axis of the end portion;
a right-angled transition zone between said terminating surface (7) and the end portion of the envelope, and being substantially in the shape of a circumferential edge,
the length of the pinch seal (2) extending from said terminating surface axially with respect to the lamp envelope by a distance of from 0.2 to 0.4 times the external diameter of the end portion of the envelope (1),
and wherein the width of the pinch seal extends up to the external diameter of the lamp envelope.

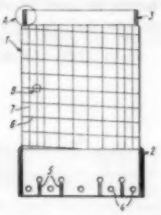
4,469,984

GRID-LIKE ELECTRODE FOR ELECTRONIC COMPONENTS AND PROCESS FOR MAKING SAME

Jury S. Sergeev, prospekt Morisa Tpreza, 30, kv. 24; Stanislav M. Shatalov, Svetlanovsky prospekt, 109, kv. 291; Vladimir G. Vildgrube, Svetlanovsky prospekt, 44, korpus 2, kv. 144; Iosif L. Gandelsman, Obvodny kanal, 157, kv. 11; Valeria K. Kuznetsova, prospekt Shvernika, 37, kv. 40; Iosif S. Libman, ulitsa Akademika Konstantinova, 10, korpus 1, kv. 155, all of Leningrad; Egor N. Ljukshin, ulitsa Baltiiskaya, 24, korpus 2, kv. 66, Moscow; Vyacheslav I. Frolov, 2 Chernogradskaya ulitsa, 7, korpus 2, kv. 28, Moscow, and Valery I. Kostikov, ulitsa Marii Ulyanovoi, 9, korpus 2, kv. 12, Moscow, all of U.S.S.R.

Filed Feb. 12, 1982, Ser. No. 348,230
Claims priority, application U.S.S.R., Feb. 13, 1981, 3237651
Int. Cl.³ H01J 1/46
U.S. Cl. 313—348 14 Claims

1. A grid-like electrode for electronic components, said electrode having a grid portion comprising a plurality of elongated grid elements, each of said grid elements comprising:
a plurality of carbon fibers forming a fibrous carbon thread; and
a carbonaceous material bonding said carbon fibers together, at least partially covering said fibers, and filling voids between said fibers,



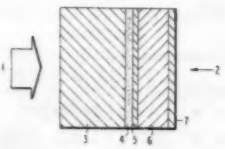
said carbonaceous material comprising the coke of an organic polymer.

4,469,985

RADIATION-SENSITIVE TUBE USING PHOTOCONDUCTIVE LAYER COMPOSED OF AMORPHOUS SILICON

Eiichi Inoue, Tokyo, and Isamu Shimizu, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1981, Ser. No. 315,556
Claims priority, application Japan, Oct. 27, 1980, 55-149322
Int. Cl.³ H01J 29/45, 31/38
U.S. Cl. 313—366 21 Claims



1. A radiation-sensitive tube having a target comprising (1) an electrically conductive support, (2) at least one layer composed of an amorphous silicon-containing substance represented by the formula $Si_{1-x-y-z}N_xC_yO_z$ wherein $1>x$, y, $z\geq 0$ and $1>x+y+z>0$, and (3) a photoconductive layer composed of amorphous silicon, said layer composed of an amorphous silicon-containing substance is adjacent to the photoconductive layer, said at least one layer (2) being positioned as a blocking layer (A) between said support (1) and the said photoconductive layer (3) and/or being positioned as a cover layer (B) on the surface of layer (3) opposite from support (1).

4,469,986

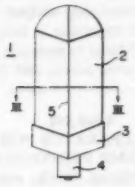
LOW PRESSURE DISCHARGE LAMP WITH POLYGON SHAPED ENVELOPE

Michihiro Tsuchihashi; Yoshinori Anzai; Toshiro Kajiwara, and Takeo Saikatsu, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,929
Claims priority, application Japan, Feb. 5, 1981, 56-15958; Feb. 24, 1981, 56-25699; Feb. 24, 1981, 56-25700; Feb. 24, 1981, 56-25701; Feb. 24, 1981, 56-25702; Mar. 20, 1981, 56-40707
Int. Cl.³ H01J 61/02, 61/30
U.S. Cl. 313—610 21 Claims

1. A low pressure discharge lamp comprising:
(a) a lamp envelope the cross-sectional shape of which perpendicular to the axis of the lamp is in the shape of a

polygon every vertex angle of which opens towards the axis of the lamp and



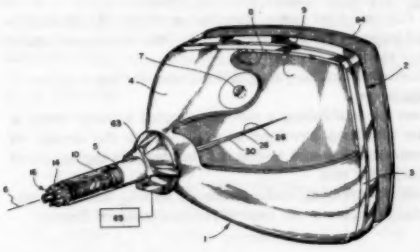
(b) a partition disposed in said lamp envelope so as to form a non-linear arc path, said partition being fixed to said lamp envelope at at least one vertex thereof.

4,469,987

MEANS FOR ENHANCING BRIGHTNESS OF A MONOCHROME CRT WITHOUT LOSS OF RESOLUTION

Allen P. Blacker, and Khem K. S. Garewal, both of Hoffman Estates, Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 23, 1981, Ser. No. 314,301
Int. Cl.³ H01J *29/46, 29/56*
U.S. Cl. 315—14 **28 Claims**



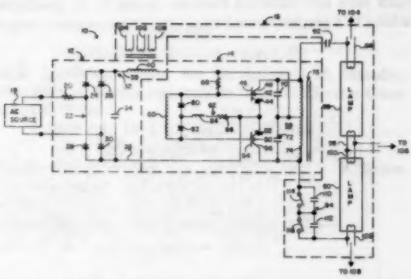
1. For use in a high-brightness cathode ray tube having an unsegmented cathodoluminescent screen for producing a monochromatic image, a high-resolution, in-line color television electron gun providing three horizontally oriented in-line electron beams converged into substantial coincidence on said screen, the diameters of said beams and hence resolution of said monochromatic image being inversely related to the magnitude of the beam currents, said gun having beam-forming lower end means including associated cathode means and grid electrode means for forming each of said beams, and main focus lens means for each of said beams including at least a focusing electrode and an accelerating electrode for receiving a predetermined pattern of applied voltages for establishing beam-focusing and accelerating electrostatic fields, the magnitude of said applied voltages being such that said beam currents are relatively low providing for small beam diameters and consequent high resolution, such that the brightness of said monochromatic image is approximately three times greater, without loss of resolution, than the brightness attained by a single-beam electron gun of equivalent beam current.

4,469,988

ELECTRONIC BALLAST HAVING EMITTER COUPLED TRANSISTORS AND BIAS CIRCUIT BETWEEN SECONDARY WINDING AND THE EMITTERS

Donald L. Cronin, 1409 James Way, Anaheim, Calif. 92801

Filed Jun. 23, 1980, Ser. No. 161,759
Int. Cl.³ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R **7 Claims**



1. An electrical ballast for energizing fluorescent lamps comprising:

first means for converting an alternating source voltage into a substantially direct current voltage;

second means for converting a direct current voltage into an amplified sinusoidal voltage having a relatively high frequency that is generally inaudible to humans, said second means including

first and second power transistors, each having a collector, a base and an emitter, said emitters being coupled together;

a tank circuit including a primary winding of a transformer connected to said collectors, said tank circuit being resonant at said relatively high frequency;

a secondary winding of the transformer having its opposite ends connected to said bases and being inductively coupled to said primary winding, said secondary winding serving to feed back a portion of the voltage developed by said tank circuit; and

bias circuit means coupled between the opposite ends of the secondary winding and said emitters, said secondary winding and said bias circuit means serving to alternatively bias the base-emitter junction of said first and second transistors with a substantial portion of the feedback voltage developed across said secondary winding, whereby when said direct current voltage is connected across said base and said emitter of said first transistor, said amplified sinusoidal voltage is developed across said primary winding;

at least two fluorescent lamps connected in a series configuration across said primary winding; and

capacitive means having a relatively high capacitive reactance at the frequency of the alternating source voltage for isolating said fluorescent lamps from said second means for converting such that should said lamps be inadvertently connected to ground, electrical stress will not be transmitted to said second means for converting.

4,469,989

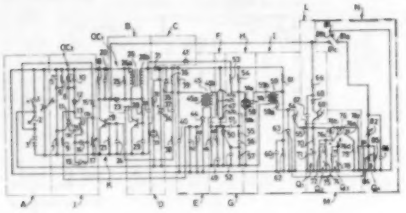
ELECTRIC FLASH APPARATUS

Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan, a part interest

Filed Mar. 1, 1982, Ser. No. 353,354
Int. Cl.³ H05B *41/34*
U.S. Cl. 315—241 P **16 Claims**

1. In an electric flash apparatus comprising electric power source means including a direct current power source circuit, converting means including an oscillator circuit for boosting the voltage of said direct current power source circuit and for generating a direct current voltage, electric energy storing

means including a main storage capacitor for storing electric energy from said converting means, flashlight generating means including a flash tube for generating flashlight, trigger signal generating means for generating a triggering signal for triggering the flash tube, triggering signal controlling means for actuating said trigger signal generating means, and flash light quantity control means for adjusting automatically the light quantity of the flashlight of said flashlight generating means when a reflecting light of the flashlight produced by the flash tube and reflected from an object to be photographed attains to a predetermined value, the improvement comprising:



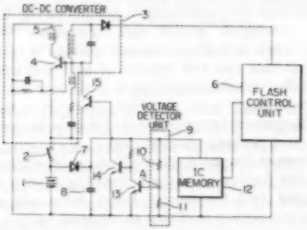
a synchronous switch having on and off states, a trigger signal control circuit which operates in a first mode for applying a mono-pulse to said trigger signal generating means during the on state of the synchronous switch and in a second mode for applying a multipulse to said trigger signal generating means during the on state of the synchronous switch, and change-over switch means for effecting operation of said trigger signal control circuit in said first or second mode.

4,469,990

ELECTRONIC FLASH DEVICE

Yuji Maruyama, and Katsumi Horinishi, both of Osaka, Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Dec. 14, 1982, Ser. No. 449,633
Claims priority, application Japan, Dec. 14, 1981, 56-202169
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—241 P **4 Claims**



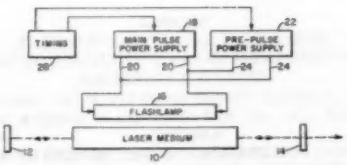
1. An electronic flash device, comprising;
a power supply;
an ON-OFF power switching means in series with said power supply;
a DC-DC converter connected to said power supply via said switching means and energized when said ON-OFF switching means is closed;
a series circuit comprising a diode and a capacitor connected across said power supply without passing through said ON-OFF switching means, so that the voltage across said capacitor corresponds to the power supply voltage;
a solid-state memory connected across said capacitor for storing flash parameters; and
voltage detecting means for generating an output signal indicative of the voltage across said capacitor,
said voltage detecting means including circuit means responsive to said output signal for disabling said DC-DC converter only when said said output signal indicates the voltage across said capacitor is below a predetermined threshold value sufficient to maintain normal operation of said memory connected across said capacitor.

4,469,991

METHOD AND APPARATUS FOR IMPROVING FLASHLAMP PERFORMANCE

Gary L. McAllister, Richland, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Apr. 27, 1981, Ser. No. 257,803
Int. Cl.³ H05B *41/30*
U.S. Cl. 315—246 **24 Claims**



1. A method for operating a flashlamp utilized to pump the active region of a laser medium comprising the steps of:
establishing a radial acoustic wave in ionizeable material confined in a flashlamp envelope so as to reduce the density of said ionizeable material in the region of discharge; and,
applying ionizing energy to said flashlamp discharge region at the time of reduced material density.

15. Apparatus for controlling the operation of a flashlamp utilized to pump the active region of a laser medium comprising:
a flashlamp including an envelope surrounding a region of discharge;
means for establishing a radially directed acoustic wave in the flashlamp envelope so as to reduce the density of ionizeable material within the flashlamp in the region of discharge; and,
means for applying ionizing energy to said flashlamp discharge region at the time of reduced material density.

4,469,992

CIRCUIT FOR CORRECTING EAST-WEST PINCUSHION DISTORTIONS

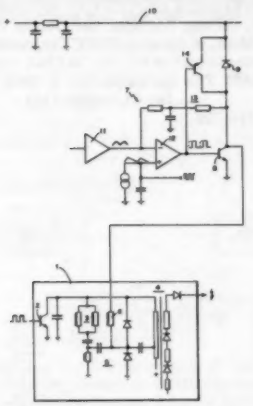
Jean-Claude Favreau, Tannheim; Uwe Hartmann, Villingen-Swenningen, and Udo Mai, Tannheim, all of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed Jul. 20, 1983, Ser. No. 515,916
Int. Cl.³ H01J *29/56*
U.S. Cl. 315—371 **10 Claims**

1. An electronic circuit for correcting east-west pincushion distortions on the picture screen of a television receiver comprising
an electrical energy supply source providing voltage to the television receiver;
a coupling coil;
a control stage switched by a horizontal scanning frequency, frame frequency modulated periodic signal;
a diode modulator controlled by the control stage via the coupling coil;
a diode connected to the electrical energy supply source for returning stored electrical energy to the electrical energy

supply source and connected to and switched by the coupling coil;

an electronic switch disposed in parallel to the diode and having its control electrode fed with the periodic signal, where the polarity of the passage direction of the current



is opposite for the electronic switch as compared to the diode such that the switch permits an electronic current through the coupling coil which is directed opposite to the diode current direction during the nonconducting phase of the control stage.

4,469,993

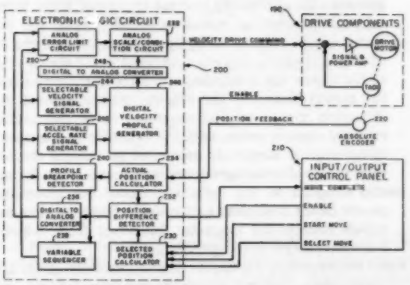
PROGRAMMABLE MULTIPLE POSITION MACHINE

Douglas L. Swanson, McKean, and Ronald K. Turk, Erie, both of Pa., assignors to Swanson Systems, Inc., Erie, Pa.

Continuation-in-part of Ser. No. 240,146, Mar. 3, 1981, Pat. No. 4,405,505. This application Feb. 10, 1982, Ser. No. 347,715

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **10 Claims**



1. An apparatus for electronically controlling the velocity, acceleration and positioning of a movement machine through the production of analog velocity command signals comprising:

means for encoding absolute position signals indicating a succession of positions passed through by said movement machine, said encoding means being coupled to said movement machine;

memory means for storing a velocity-position profile;

means of addressing said memory means with absolute position signals, such that digital velocity signals are read out from said memory means corresponding to the absolute position signals in accordance with the velocity-position profile; and

output means for receiving the digital velocity signals to produce analog velocity command signals, wherein said output means includes means for converting the digital velocity signals into analog velocity signals, and means for scaling the analog velocity signals to produce analog velocity command signals with an amplitude sufficient to drive said movement machine.

4,469,994

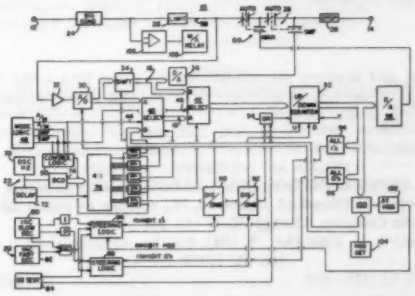
REFERENCE SIGNAL CIRCUIT

Richard E. Lundberg, Ashby, and Bartholomew D. Murphy, Lincoln, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Apr. 11, 1983, Ser. No. 483,813

Int. Cl.³ G05B *11/18*

U.S. Cl. 318—591 **9 Claims**



1. An automatic tracking circuit for selectively providing an output signal in accordance with an automatic signal input, a last valid automatic signal input or a manual signal input with bumpless transfer there between comprising:

a main signal channel including an input pin electrically connected to an output pin through an auto-manual switch and a memory switch;

an A/D converter for producing a digital word output which tracks the automatic signal input;

a memory channel including a shift register and a first D/A converter connecting the A/D converter and the memory switch;

a tracking channel including at least one signal select circuit connecting the A/D converter with an UP/DOWN counter;

manual signal input means connected to the UP/DOWN counter; and,

a second D/A converter connecting the output of the UP/-DOWN counter to the auto-manual switch.

4,469,995

METHOD OF STOPPING A STEPPING MOTOR

David Chiang, Dix Hills; Mosi Chu, Setauket, and Solomon Manber, Sands Point, all of N.Y., assignors to MCC Associates, Short Hills, N.J.

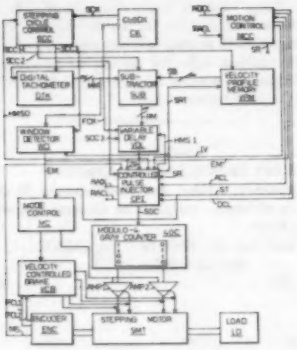
Filed Jul. 19, 1982, Ser. No. 399,207

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—685 **16 Claims**

1. The method of stopping a feedback-controlled stepping motor having a stator and a rotor wherein the drive of the stator field is leading the rotor by more than one step and the rotor is rotating with an angular velocity within a first range of values comprising decreasing the drive lead of the stator field from its slewing value to another value whereby the angular velocity of the rotor decreases below said first range, the drive lead being progressively changed as a function of the difference between a stepwise decreasing desired value of velocity

and the actual velocity value sensing for the decrease of the angular velocity of the rotor to within a second range of values, and stopping the rotation of the stator filed when the angular velocity of the rotor is within said second range of values to stop the rotor.



4,469,996

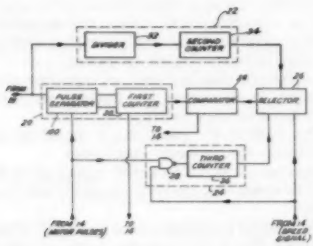
INPUT CONTROL CIRCUIT FOR A STEP MOTOR

Norman E. Oltendorf, Algonquin, Ill., assignor to Bodine Electric Company, Chicago, Ill.

Filed Oct. 28, 1982, Ser. No. 437,493

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **10 Claims**



1. An input control circuit for controlling a step motor in response to a series of command pulses, said step motor having a drive circuit for generating a series of motor pulses and for providing a speed signal, comprising, in combination:

first counter means for receiving said command pulses and said motor pulses and for maintaining a first count based thereon, said first counter means providing a first count signal representative of said first count;

second counter means for receiving said command pulses and for maintaining a second count based thereon, said second counter means providing a second count signal representative of said second count;

third counter means for receiving said speed signal and said motor pulses and for maintaining a third count based thereon, said third counter means providing a third count signal representative of said third count;

selector means for receiving said second count signal, said third count signal and said speed signal, said selector means issuing a selector signal derived from said second count signal and said third count signal, in accordance with said speed signal;

comparator means, interconnected to said first counter means and said selector means, for issuing a deceleration signal in response to said first count signal and said selector signal.

4,469,997

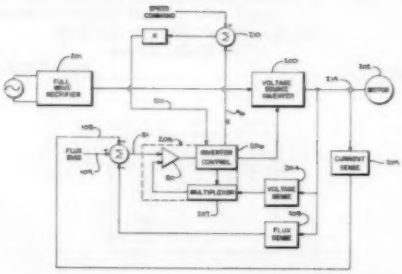
SELF GENERATIVE PWM VOLTAGE SOURCE INVERTER INDUCTION MOTOR DRIVE

William P. Curtiss, Winthrop, and Gordon P. Sharp, Newton, both of Mass., assignors to IMEC Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 262,742, May 11, 1981, Pat. No. 4,400,655. This application Oct. 6, 1982, Ser. No. 433,012

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—729 **14 Claims**



1. An induction motor drive which comprises:

a PWM voltage source inverter fed by a fixed d.c. voltage;

stator winding current control means including means for sensing the current flowing in the motor stator windings, means for generating current error signals proportional to the difference between the sensed stator winding currents and a set of alternating current command wave forms and means for effecting the voltage source inverter in response to said current error signals to provide control of the motor stator winding currents;

voltage sensing means coupled to the motor stator windings and being operable to generate a set of cyclic feedback signals related in both frequency and phase to the fundamental of the motor stator winding voltages;

power factor control means connected to receive said cyclic feedback signals and being operable in response thereto to generate the alternating current command wave forms to said stator winding current control means, the power factor control means being operable to control the phase of the alternating current command wave forms relative to the motor stator winding voltages to thereby maintain the power factor of the electric power applied to the induction motor at a commanded level and including inverter control means which is operable in response to a stator current amplitude command to control the amplitude of the alternating current command wave forms;

means coupled to the induction motor for generating a power factor command to the power factor control means which reflects the magnetic flux error from which the induction motor is to operate; and

input means coupled to the inverter control means for generating a stator current amplitude command.

4,469,998

THREE-PHASE POWER FACTOR CONTROLLER WITH INDUCED EMF SENSING

Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

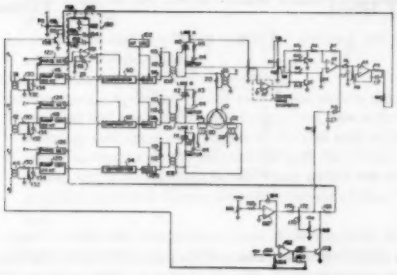
Filed Dec. 16, 1982, Ser. No. 450,319

Int. Cl.³ H02K *17/04*

U.S. Cl. 318—729 **14 Claims**

1. In a power factor controller for an A.C. induction motor of the type comprising electronic switching means, having an

on state and an off state, connected in series with the motor, phase detector means for sensing the motor current and line voltage and providing an output proportional to the phase difference between the line voltage and current; command signal generating means for generating a power factor command signal; and control means, responsive to said output of said phase detector means and said power factor command



signal, for controlling the switching state of said electronic switching means, the improvement comprising sensing means for sensing an induced emf produced by the motor during a time interval when said electronic switching means is in the off state thereof and for producing, in accordance with the induced emf sensed thereby, a feedback signal for use in controlling switching of said electronic switching means.

4,469,999

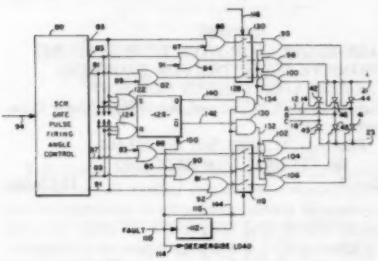
REGENERATIVE DRIVE CONTROL

Kenneth S. Swenson, Bristol, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 246,463, Mar. 23, 1981, abandoned. This application Feb. 14, 1983, Ser. No. 466,237

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—798 **28 Claims**



1. A regenerative drive control connectable to an AC power source comprising a negative converter bridge having an input connectable to the AC power source and an output connected to a DC bus including a positive bus and a negative bus, a load having inductance and resistance and responsive to the DC output on said DC bus, said load being operable to generate regenerative current and supply said regenerative current through said negative converter bridge to the AC power source, said negative converter bridge including a plurality of switchable devices arranged in a plurality of series connected pairs with each series connected pair forming a leg of said negative converter bridge which extends between said positive and said negative buses, a gating circuit for normally sequential gating said plurality of switchable devices from a non-conductive state to a conductive state to establish a controllable DC output on said DC bus which is directed to said load, and sensing means for generating an inhibit signal indicative of a sensed predetermined condition wherein it is desired to remove the conduction path from the load through the negative converter bridge to the AC power source and deenergizing said load to prevent generation of regenerative current by said load upon the occurrence of the sensed condition, said sensing means upon the occurrence of said sensed condition preventing said gating circuit from normally sequentially gating said plurality of switchable devices, said sensing means upon the occurrence of said sensed condition actuating said gating circuit to cause said gating circuit to gate at least one of said switchable devices from a non-conductive state to a conductive state to effect the simultaneous conduction of a pair of switchable devices forming a leg of said negative converter bridge, said simultaneous conduction of a pair of switching devices in a leg of said negative converter bridge providing a circulating path through said pair of simultaneously conductive switching devices in said negative converter bridge for the inductive current of said load prior to the build up of current to a destructive level as a result of commutation failure thereby enabling the inductive current to exponentially decay toward zero upon the occurrence of said sensed condition.

4,470,000

APPARATUS AND METHOD FOR SIMULATING THE MACHINE FLUX OF A ROTATING FIELD MACHINE

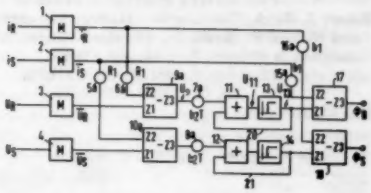
Georg Heinle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,303

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138557

Int. Cl.³ H02P *7/36*

U.S. Cl. 318—805 **7 Claims**



1. A circuit for simulating the machine flux of a rotating-field machine from the terminal voltage and conductor current of at least two phases of the stator of the rotating-field machine, and which is utilized in association with a digital evaluation system including means for generating a main clock signal having a period defining successive sampling periods, comprising:

first digital averaging means having the terminal voltage for at least said two phases as inputs for forming a digital average value of the terminal voltage for each of said two phases, said digital average value of the terminal voltage for respective ones of said two phases being formed in each of the successive sampling periods defined by said main clock signal;

second digital averaging means having the conductor current for at least said two phases as inputs for forming a digital average value of the conductor current for each of said two phases, said digital average value of the conductor current for respective ones of said two phases being formed in each of the successive sampling periods defined by said main clock signal;

means, for each of said two phases, having the digital average value of the conductor current for a respective one of said two phases as an input, for generating a digital signal proportional to an ohmic voltage drop in the stator of the rotating-field machine for respective ones of said two phases;

first digital subtraction means, for each of said two phases, having said digital average value of the terminal voltage and the digital signal proportional to the ohmic voltage drop for a respective one of said two phases as inputs, for producing a first digital difference signal proportional to a difference between said digital average value of the terminal voltage and the digital signal proportional to the ohmic voltage drop for respective ones of said two phases;

digital integrating means, for each of said two phases, having said first digital difference signal for a respective one of said two phases as an input, for integrating said first digital difference signal and producing an integrated digital signal for respective ones of said two phases;

means, for each of said two phases, having said digital average value of the conductor current for a respective one of said two phases as an input, for generating a digital signal proportional to an inductive voltage drop in the stator of the rotating-field machine for respective ones of said two phases; and

second digital subtraction means, for each of said two phases, having said integrated digital signal and said digital signal proportional to the inductive voltage drop for a respective one of said two phases as inputs, for producing a second digital difference signal proportional to a difference between said integrated digital signal and said digital signal proportional to the inductive voltage drop for respective ones of said two phases, said second digital difference signal for respective ones of said two phases being proportional to the machine flux for respective ones of said two phases.

4,470,001

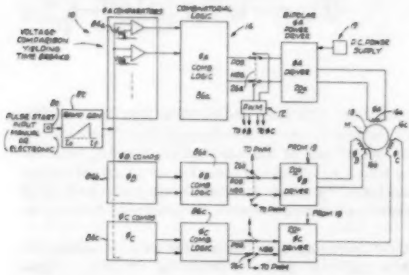
INDUCTION MOTOR CONTROL

Robert J. Resch, Chardon; Dov Hazony, University Heights, and Richard E. Berris, Jr., Cleveland Heights, all of Ohio, assignors to Cyberex, Inc., Mentor, Ohio

Filed Jun. 9, 1981, Ser. No. 271,981

Int. Cl.³ H02P *7/36, 1/16*

U.S. Cl. 318—810 **4 Claims**



1. A method of operating a conventional three phase induction motor to produce extremely large starting torque compared to the nominal motor torque comprising:

(a) providing a motor operating D.C. power supply;

(b) connecting opposite ends of first, second and third motor windings across the power supply via respective controller circuits each comprising at least one electronic switch for enabling current flow in either direction through an associated motor winding;

(c) producing asymmetrical noncyclic control signal waveforms for each of said electronic switches to enable individual power supply energization of said first, second and third windings by asymmetrical noncyclic current pulses so that first, second and third magnetic fields generated by said pulses coact with each other to increase said starting torque.

4,470,002

MOUNTING ARRANGEMENTS FOR ELECTRICAL POWER CIRCUITS

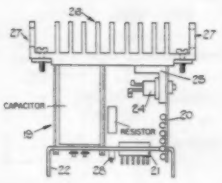
Robert H. Brown, Kingston on Thames, England, assignor to Lucas Industries plc, Birmingham, England

Filed Jun. 4, 1982, Ser. No. 385,320

Claims priority, application United Kingdom, Jun. 5, 1981, 8117291

Int. Cl.³ H05K *7/20*

U.S. Cl. 320—1 **3 Claims**



1. A mounting arrangement and a power circuit comprising a casing adapted to be mounted upon a fixed support, said casing defining an enclosure having an open end, a lid which can close the open end of the casing, means for establishing a seal between the lid and the casing, a support frame secured to the lid, cooperating guide means on the frame and casing, the power circuit including heat producing components which are mounted on the lid or are in heat conducting relationship with the lid, a socket mounted on the casing and facing the open end of the casing and a plug carried on the frame for engagement with said socket to effect electrical connection to the power circuit, said plug and socket being guided for engagement by said guide means as the frame is passed into the casing, said power circuit including a capacitor, a switch operable upon initial movement of the lid and frame from the casing, said switch being connected in a discharge circuit for said capacitor whereby the capacitor will be discharged upon operation of said switch.

4,470,003

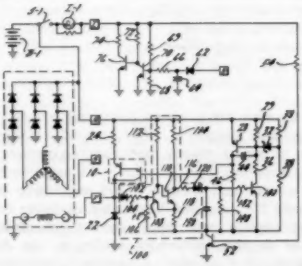
VOLTAGE REGULATOR WITH TEMPERATURE RESPONSIVE CIRCUITRY FOR REDUCING ALTERNATOR OUTPUT CURRENT

Clair E. Mitchell, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 11, 1983, Ser. No. 483,466

Int. Cl.³ H02J *7/14;* **H02P** *9/30*

U.S. Cl. 322—23 **12 Claims**



1. An improved voltage regulator circuit for limiting the output of a mechanically driven alternator as a function of the ambient temperature within the voltage regulator circuit including:

switching means connected between the DC output terminal and the field winding of said alternator for closing and

opening a conduction path for field current to said field winding;

means connected to said switching means and to said DC output terminal of said alternator for regulating the DC output voltage of said alternator by controlling said switching means to close said conduction path when the DC output voltage at said DC output terminal is below a predetermined voltage value and to open said conduction path when the DC output voltage is above said predetermined value;

means within said regulating means for defining said predetermined voltage value;

wherein the improvement comprises:

temperature responsive means connected across said field winding and connected to said regulating means for commanding said regulating means to control said switching means to open a closed conduction path for a time delay period when the ambient temperature within the voltage regulator circuit is above a predetermined critical value; and

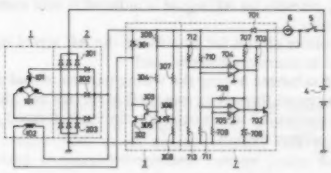
means within said temperature responsive means for providing a time delay period proportional to the value of the ambient temperature above the predetermined critical value.

4,470,004

CHARGE INDICATING SYSTEM

Mitsuharu Morishita, and Shinichi Kouge, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1983, Ser. No. 478,126
Claims priority, application Japan, Mar. 23, 1982, 57-47927
Int. Cl.³ H02J *7/14*; H02P *9/00*
U.S. Cl. 322—99 **7 Claims**



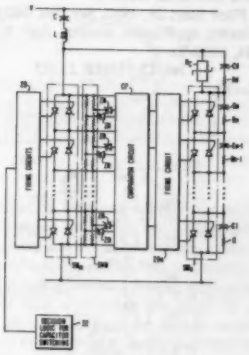
1. A charge indicating system, comprising: a rectifier having first and second rectifier output terminals and a ground terminal for rectifying an alternating-current output induced at the armature coils of a charging generator; a storage battery charged by the output at the first rectifier output terminal; a field coil disposed in said charging generator and connected to the second rectifier output terminal; a charge indicating lamp connected between said second rectifier output terminal and said storage battery and in series with a key switch; a diode having its anode and cathode respectively connected in series with said indicating lamp and said second rectifier output terminal; a voltage regulator for controlling the output voltage of said generator to a first predetermined value by interrupting the current supplied to said field coil; and a switching element connected at one terminal between said charge indicating lamp and said diode and at another terminal to ground, and for operating to light said charge indicating lamp when the voltage at said rectifier output terminal is lower than the voltage of said storage battery but higher than a second predetermined value, said second voltage value being lower than said first predetermined value but above a second rectifier output voltage normally existing during the initial start-up of said charging generator.

4,470,005

STATIC VAR GENERATOR HAVING A THYRISTOR CIRCUIT ARRANGEMENT PROVIDING REDUCED LOSSES

Laszlo Gyugyi, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 2, 1982, Ser. No. 438,431
Int. Cl.³ H02J *3/18*
U.S. Cl. 323—210 **2 Claims**



1. A static VAR generator, comprising:

(a) a capacitance means disposed for connection into an AC network;

(b) a monitoring means for monitoring the capacitive requirements of said AC network;

(c) a control means having antiparallel connected thyristors for connection of said capacitance means into the AC network in response to the capacitive requirements of the AC network; and

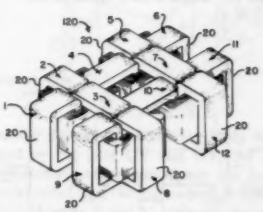
(d) an auxiliary control means having antiparallel thyristors to connect a zinc oxide variator means for discharging the capacitance means when the AC network is subject to high transient voltages.

4,470,006

TRANSFORMER

Joseph W. Drapp, 7022 Eugene Ave., St. Louis, Mo. 63116

Filed Sep. 30, 1982, Ser. No. 428,888
Int. Cl.³ G05F *3/06*
U.S. Cl. 323—307 **2 Claims**



1. A transformer comprising twelve cores, a first six arranged in parallel rows of three, a second six, in parallel rows of three at right angles to the first six and positioned between the first and second, and second and third cores of each of the two parallel rows of the said first six cores, four coil assemblies each comprising a primary winding and a secondary winding, each of said primary and secondary windings embracing legs of four cores, said primary and secondary windings being

electrically connected in parallel to like windings in adjacent coil assemblies in a 180° out of phase connection.

4,470,007

APPARATUS FOR TESTING THE ELECTRICAL BREAKDOWN RESISTANCE POTENTIAL OF INSULATING MEDIA AND/OR COOLING MEDIA

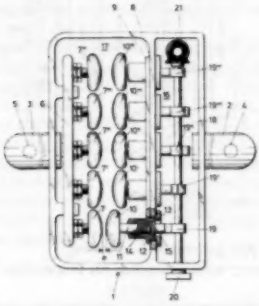
Josef Baur, Sulz; Armin Bernhart, Schlins, and Roland Ellensohn, Götzis, all of Austria, assignors to Baur Prüf - und Messtechnik KG, Sulz, Austria

Filed Mar. 26, 1982, Ser. No. 362,079

Claims priority, application Austria, Apr. 1, 1981, 1524/81; May 29, 1981, 2400/81

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—51 **33 Claims**



1. Apparatus for testing the electrical breakdown resistance potential of insulating media and/or cooling media, especially of synthetic insulating oils for transformers, transducers, switches or the like, comprising a container, electrodes disposed within said container and arranged to form an adjustable spark distance, characterized in that said electrodes are positioned inside said container so that at least one of said electrodes is movable relative to the other said electrodes for providing a plurality of pairs of said electrodes, and means for changing in alternating time sequence the spark distances formed by each pair of said electrodes

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4,470,008

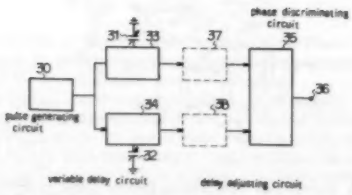
CAPACITANCE SENSOR

Ryochi Kato, Yachiyodai Nishi 6-2, Yachiyo-shi, Chiba-ken, Japan

Filed Jul. 2, 1982, Ser. No. 394,836

Int. Cl.³ G01R *27/26*; G01F *23/26*

U.S. Cl. 324—61 R **4 Claims**



1. A capacitance sensor comprising:

a pulse generating circuit;

a plurality of variable delay circuits connected to said pulse generating circuit, each including an integrating circuit having a variable capacitance transducer as an integrating capacitor so as to delay a pulse from said pulse generating circuit by a time lag corresponding to a capacitance value of said transducer and then output the thus-delayed pulse, and a binary circuit adapted to binary-code each output of said integrating circuit;

a phase discriminating circuit connected to said variable delay circuits for discriminating a phase difference of the pulses output respectively from said plurality of variable delay circuits and then output sensed information; and

at least one variable adjusting circuit connected to at least one of said variable delay circuits for adjustment the extent of an off-set of each pulse and output the pulses with desired time lags.

4,470,009

SURFACE POTENTIOMETER

Yoshiaki Takayanagi, Kawasaki; Koji Suzuki, Yokohama; Nao Nagashima, Tokyo; Hiroshi Ogawa; Kouki Kuroda, both of Yokohama, and Joyji Nagahira, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 219,483

Claims priority, application Japan, Dec. 28, 1979, 54-172766; Dec. 28, 1979, 54-172768; Dec. 28, 1979, 54-172769; Dec. 28, 1979, 54-172770; Dec. 28, 1979, 54-172771

Int. Cl.³ G01N *31/02*

U.S. Cl. 324—72 **9 Claims**

1. A surface potentiometer comprising:

a measuring electrode;

a chopper for intermittently shielding the electric field between said measuring electrode and an object to be measured, wherein an AC signal is induced in said measuring electrode;

a preamplifier circuit for amplifying the AC signal induced in said measuring electrode; and

a printed substrate having the wiring pattern of said preamplifier circuit formed on one surface thereof and the electrode pattern of said measuring electrode formed on the other surface thereof.

4,470,010

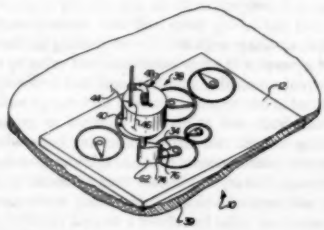
PIEZOELECTRIC APPARATUS FOR SENSING MOVEMENT OF A MOVING ELEMENT SUCH AS A DIAL ARM OF A UTILITY METER

Lawrence M. Sears, 3263 Glencairn Rd., Shaker Heights, Ohio 44122

Filed Oct. 15, 1981, Ser. No. 311,531

Int. Cl.³ G01R *29/00*; H01L *41/08*

U.S. Cl. 324—157 **15 Claims**



1. Apparatus for detecting utility usage as registered by a

utility meter having a dial arm disposed on a meter face covered by a transparent window, comprising:

a base portion mounted over a hole in said transparent window at a position close to said dial arm,

a rotatable axle extending through said base portion and said window hole towards said meter face,

striker means and piezoelectric means, one of said means being fixed to said axle and the other of said means being fixed to said base portion, said striker means and piezoelectric means being positioned relative to one another such that as said axle rotates, said one of said means moves into abutment with said other of said means,

means for resiliently biasing said one of said means towards abutment with said other of said means, and

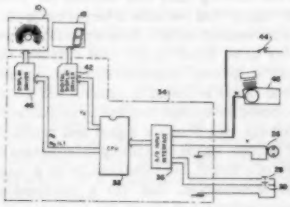
a trip lever extending radially from the end of said axle which is proximal said meter face into the path of rotation of said dial arm, such that as said dial arm rotates, it catches, deflects, and then releases said trip lever, thereby causing said one of said means to withdraw from and then snap back against said other of said means, whereby said piezoelectric means generates an electrical signal.

4,470,011

ELECTRIC TYPE TACHOMETER FOR VEHICLES

Yutaka Masuda, Fukuroi, Japan, assignor to Yamaha Motor Co., Ltd., Iwata, Japan

Filed Sep. 24, 1982, Ser. No. 430,047
Claims priority, application Japan, Sep. 24, 1981, 56-150879
Int. Cl.³ G01P *3/48;* G01D *3/54*
U.S. Cl. 324—166 **12 Claims**



1. An electric tachometer device comprising; signal generating means for generating a signal having a voltage and frequency proportional to an engine's r.p.m.; said generating means being connected to receive voltage pulses from said engine; signal processing means receiving the output signal from said signal generating means and generating a binary coded decimal signal representing said engine r.p.m.; display means for displaying the output of said processing means; said display means comprising a plurality of sequentially illuminated segments; drive means receiving the binary coded output of said processing means for driving said display means; display select means for selecting a normal scale display or an expanded scale display; said display select means changing the display scale by increasing or decreasing the number of segments to be illuminated per unit of r.p.m.

4,470,012

APPARATUS FOR GENERATING RATE SIGNALS

James H. Nugent, Hampden, Mass., and Hans S. Berger, Plainville, Conn., assignors to Coleco Industries, Inc., Hartford, Conn.

Filed Sep. 29, 1982, Ser. No. 427,771
Int. Cl.³ G01P *3/48, 3/54*
U.S. Cl. 324—168 **7 Claims**

1. Apparatus for determining the rate of rotation of a member and direction of rotation comprising,

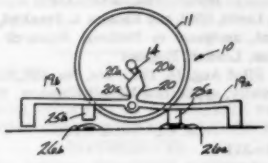
a member having spaced apart legs resting on a surface, a resilient bridging member extending between said legs,

means extending through said bridging member centrally thereof and dividing said bridging member into first and second resilient arms,

an actuator member extending from said bridging member upwardly from said extending means,

a pair of switches positioned below said bridging member on either side of said actuator member,

a pair of switch actuating legs depending from said bridging member, each adapted to operate one of said switches upon deflection of said arms, and



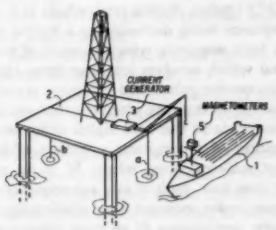
a rotatable member, a cam extending from said rotatable member and adapted to contact and deflect said actuator member and cause said actuator member to flex said arms and cause one of said depending legs to close its associated switch, said extending means isolating downward deflection of one of said arms from the other of said arms, whereby the direction of rotation of said rotatable member is indicated by the switch closed and the frequency of the switch closure is indicative of the rate of rotation of said rotatable member.

4,470,013

METHOD AND APPARATUS FOR POSITIONING A BOAT BY MONITORING THE MAGNETIC FIELD CREATED BY CURRENT CIRCULATING IN AN ELECTRIC CIRCUIT

Gilles Possémé, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 15, 1982, Ser. No. 339,628
Claims priority, application France, Jan. 16, 1981, 81 00779
Int. Cl.³ G01B *7/14;* G01R *33/02, 19/15;* B63H *25/00*
U.S. Cl. 324—207 **12 Claims**



1. A device for positioning a moving body in a horizontal plane indicated by the axes OX and OY, the moving body carrying magnetometers for measuring the magnetic field, produced by a vertical wire through which flows a current i, at the point of coordinates X and Y, wherein the current i is the sum of two currents i_o and i_1, the said currents i_o and i_1 corresponding to currents at frequencies f_o and f_1, in which frequency f_1 called the high frequency is much higher than frequency f_o called the low frequency and the current i_1 is modulated by recurring burst of pulses with a recurring period T_O, each burst lasting less than $T_o/4$ in which $t_O = 1/f_O$, the moving body comprising two pairs of magnetometers, the first pair measuring the components of the magnetic field h_x^o and h_y^o along axes Ox and Oy associated with the moving body at

frequency f_o and the second pair of magnetometers measuring the components of these axes h_x^1 and h_y^1 at frequency f_1, means for providing a signal S synchronous with current i_o, means for demodulating the signals h_y^o and h_y^o by utilizing said signal S thus supplying algebraic values of the magnetic field components.

4,470,014

NMR SPECTROSCOPY

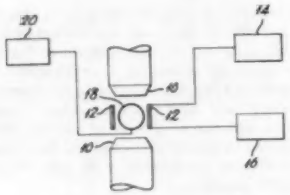
Malcolm H. Levitt, Hull, and Thomas A. Frenkiel, Oxford, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 16, 1982, Ser. No. 408,281

Claims priority, application United Kingdom, Mar. 26, 1982, 8208928

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—311 **6 Claims**



1. A method of heteronuclear decoupling in high resolution pulsed NMR spectroscopy, in which during the acquisition from a sample of signals resulting from resonance of a nuclear species to be observed the sample is irradiated with radio frequency energy substantially at the resonant frequency of an interfering nuclear species, the irradiation being in the form of a train of composite pulses each of which is effective to cause at least approximate inversion of the longitudinal magnetisation in respect of said interfering nuclear species, said composite pulses being of two types which differ only by virtue of the r.f. phase for one type being opposite that for the other type and said train being in the form of a repeated sequence consisting of 2^{N+1} pulses of each type, where N is a positive integer, said sequence being derivable by a logical expansion process from a basic sequence which consists of two pulses of each type and which involves less than three changes of type between successive pulses, said expansion process consisting of at least one step of deriving a higher order sequence from a lower order sequence so that said higher order sequence is a cyclic permutation of a composite sequence which consists of M different sub-sequences, where M is an even number not greater than four, each of said sub-sequences being related to said lower order sequence by a relationship selected from (a) the cyclic permutation of an even number of pulses, (b) the cyclic permutation of an odd number of pulses, (c) the cyclic permutation of an even number of pulses combined with the interchange of the two types of pulse, and (d) the cyclic permutation of an odd number of pulses combined with the interchange of the two types of pulse, with the selection being subject to the conditions that:

(A) if M is four then the four types of relationship (a), (b), (c) and (d) respectively apply to the four sub-sequences constituting said composite sequence, and

(B) if M is two then the four types of relationship (a), (b), (c) and (d) respectively apply to the four sub-sequences constituting a notional sequence composed of said composite sequence and a composite sequence of a similar kind which is related to said composite sequence by the cyclic permutation of an even number of pulses.

4,470,015

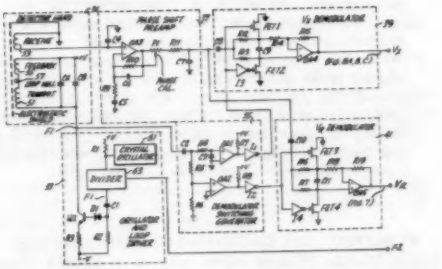
METAL DETECTOR SYSTEM WITH UNDESIRABLE TARGET AND MINERALIZED GROUND DISCRIMINATION

Richard E. Hirschi, Sweet Home, and George C. Payne, Salem, both of Oreg., assignors to Teknetics, Inc., Lebanon, Oreg.

Filed Nov. 25, 1981, Ser. No. 324,866

Int. Cl.³ G01V *3/10*; G01N *27/72*; G01R *33/12*

U.S. Cl. 324—329 **40 Claims**



1. A metal detector system with undesirable target and mineralized ground discrimination comprising:

(A) a signal production subsystem comprising:

(1) detector means, including coil means and oscillator means for driving said coil means, for producing a detector signal that includes a target component when relative movement occurs between said coil means and a suitably close metal target, said detector signal also including a ground mineralization component when said metal target is buried in mineralized ground;

(2) an electronic subsystem coupled to said detector means for receiving said detector signal and producing: (a) a ground balance signal containing information about the presence of a target, but substantially no ground mineralization information; and, (b) a discriminate signal containing information about the presence of a target and whether the target is or is not of the type being discriminated against; and,

(B) a signal processor including:

(1) dividing means coupled to said electronic subsystem of said signal production subsystem for receiving said ground balance signal and said discriminate signal, dividing said discriminate signal by said ground balance signal and producing pulses on one of two outputs, depending upon whether said target is or is not of the type being discriminated against;

(2) signal ratio discrimination means coupled to said dividing means for receiving pulses produced by said dividing means on said one of said two outputs and producing a DC control signal whose polarity is dependent upon which one of said two outputs pulses occur; and,

(3) indicator means coupled to said signal ratio discrimination means for receiving said DC control signal and producing an indication of whether said target is or is not of the type being discriminated against based on the polarity of said DC signal.

4,470,016

PORTABLE PROBE CARRIER

Leslie W. Palmer, West Suffield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 29, 1982, Ser. No. 363,358

Int. Cl.³ G01L *3/26, 5/13*

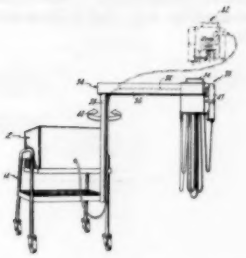
U.S. Cl. 324—402 **5 Claims**

1. Apparatus for electrically connecting the signal lines from one or more engine sensor probes, each selectable for use by an

operator for sensing the value of a probe related parameter in an internal combustion (IC) engine, to a multifunction test console responsive at corresponding parameter inputs to the selected probe sensed signal values for providing therefrom a measurement of engine performance quality, comprising:

electrical conduit means for enclosing a plurality of electrical connection lines, one associated with each sensor signal line, each connected at one end to a parameter input of the test console;

interconnect means, responsive to the sensor probe signal lines and to said connection lines, for interconnecting the sensed value lines signals from each probe signal line to its associated connection line; and



a portable case structure, susceptible to hand transport by an operator and having a housing for enclosing said interconnect means, said housing having one or more apertures along the outer surface thereof for providing electrical communication between said interconnect means, said connection lines, and the probe signal lines, said housing outer surface further including sensor probe mounting means for securing in storage thereon, in a releasably engaging manner, any and all of the sensor probes, whereby said case structure and sensor probes may be removed from the test console and hand transported to a remote work site at a distance limited only by said electrical conduit means.

4,470,017

LINEAR VOLTAGE-PULSE BASE-CLIPPING CIRCUIT WITH ADJUSTABLE-THRESHOLD CONDITION AND ECHOGRAPH COMPRISING SUCH A DEVICE

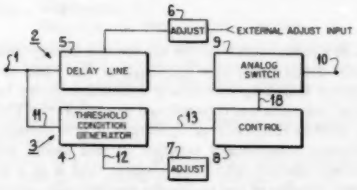
André Eder, Paris, France, assignor to CGR Ultrasonic, Villenoy-les-Meaux, France

Filed Mar. 23, 1981, Ser. No. 246,443

Claims priority, application France, Mar. 28, 1980, 80 07018

Int. Cl.³ H03K *5/08*

U.S. Cl. 328—116 **8 Claims**



1. Linear voltage-pulse base-clipping circuitry with adjustable-threshold condition, comprising for unipolar signals an input (1) for an analog input signal to be processed and an output (10) for a signal after processing, this processing being provided by circuitry comprising two lines (2,3) connected in parallel, the first line, or analog-signal transfer line, comprising in series a delay line (5) and a controllable transfer attenuator (9) and a circuit (6) providing adjustment of a delay of said delay line; the second line, or control line (3), comprises a threshold-condition generator (4) adjustable by means of an adjusting circuit (7), said threshold-condition generator being in series with a control generator (8) whose output is connected to an input of said attenuator; said threshold-condition generator comprising an input-voltage comparator for comparing the input voltage with a reference voltage adjustable by means of said adjusting circuit; and said control generator for the attenuator comprises a monostable with an adjustable time-delay circuit whose output controls the operation of said attenuator.

4,470,018

CIRCUIT FOR PRODUCING A CONTROL VOLTAGE DEPENDING ON FREQUENCY AND/OR PHASE DIFFERENCES

Walter Steinlin, Bolligen, Switzerland, assignor to Hasler AG Bern, Bern, Switzerland

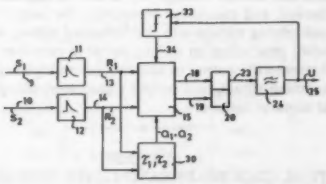
PCT No. PCT/CH81/00106, § 371 Date May 21, 1982, § 102(e) Date May 21, 1982, PCT Pub. No. WO82/01289, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 25, 1981, Ser. No. 380,811

Claims priority, application Switzerland, Sep. 29, 1980, 7272/80

Int. Cl.³ H03D *13/00*; H03L *7/08*

U.S. Cl. 328—133 **13 Claims**



1. A circuit for producing a control voltage depending on a frequency and/or phase difference between a first and a second periodic signal comprising:

a first trigger circuit receiving the first periodic signal for providing a first trigger signal;

a second trigger circuit receiving the second periodic signal for providing a second trigger signal;

an inhibiting circuit connected to the output of the first trigger circuit and to the output of the second trigger circuit;

an inhibiting time interval generator connected to the output of the first trigger circuit and to the output of the second trigger circuit and having its own output connected to an input of the inhibiting circuit for providing to the inhibiting circuit first inhibiting signals and second inhibiting signals;

a first flip-flop having two inputs connected to the inhibiting circuit via a first line for the first trigger signal to set the flip-flop and via a second line for the second trigger signal to reset the flip-flop;

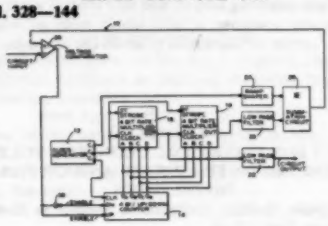
an averaging circuit having its input connected to the output of the flip-flop for generating an output control voltage; and

a comparator connected to the output of the averaging circuit for comparing its output control voltage with an average output control voltage and having an output connected to an input of the inhibiting circuit for transmitting signals to the inhibiting circuit indicating if the output control voltage is larger or smaller than the average output control voltage.

4,470,019
RATE MULTIPLIER SQUARE ROOT EXTRACTOR WITH INCREASED ACCURACY FOR TRANSMITTER APPLICATIONS

Marion A. Keyes, IV, Chagrin Falls, and William L. Thompson, Chardon, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 6, 1982, Ser. No. 395,429
Int. Cl.³ G06G 7/20, 7/12
U.S. Cl. 328—144 6 Claims

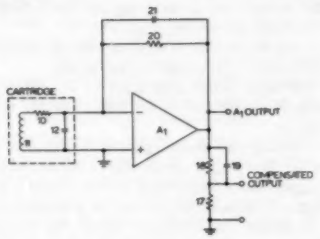


1. A circuit for extracting the square root of an incoming signal comprising a frequency generator producing a substantially constant frequency output, a first multiplying means connected to said frequency generator, a second multiplying means connected to said frequency generator and to the output of said first multiplying means, counter means connected to said first and second multiplying means to regulate the operation thereof, and means for comparing the output of said second multiplying means with the incoming signal, said comparing means producing an output signal in response to a difference between the output of said second multiplying means and the incoming signal, said output signal controlling the output of said counter means.

4,470,020
VIRTUAL GROUND PREAMPLIFIER FOR MAGNETIC PHONO CARTRIDGE

Daniel R. Mohr, 82 Half Acre Rd., Cranbury, N.J. 08512

Filed May 6, 1982, Ser. No. 375,659
Int. Cl.³ H03F 1/34; G11B 5/02
U.S. Cl. 330—304 9 Claims



1. A preamplifier for a magnetic phonograph cartridge having a characteristic impedance L_p, a characteristic resistance R_p, and a characteristic capacitance C_p, said preamplifier comprising:

a. An amplifier means having an inverting input node and an output node for producing at the output node thereof an output voltage relative to circuit common, said amplifier having a complementary-symmetry input stage including a common-base-connected NPN transistor and a common-base-connected PNP transistor, said amplifier means further including emiter degeneration means for providing linearity and stability of voltage gain;

b. shunt feedback transimpedance means electrically connecting said output node of said amplifier means to said inverting input node, said shunt feedback transimpedance means comprising a first resistive element R_1 and a first capacitive element C_1; and,

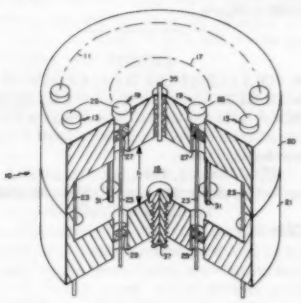
c. a high pass filter means connected to said output node for providing an increasing voltage gain over a predetermined range of frequencies and a compensated voltage output

wherein said high pass frequency characteristic of said high pass filter means over said predetermined range of frequencies substantially compensates for the low pass frequency characteristics of said magnetic phonograph cartridge over said predetermined range of frequencies so as to produce a substantially constant frequency response for said preamplifier over said predetermined range of frequencies.

4,470,021
POWER COMBINER FOR COAXIAL DIODE OSCILLATORS

Richard W. Laton, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 17, 1982, Ser. No. 408,586
Int. Cl.³ H03B 7/14
U.S. Cl. 331—56 2 Claims



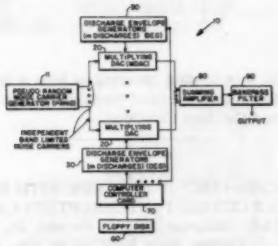
1. In a power combiner for microwave energy produced by coaxial diode oscillators operating in the TEM mode, said combiner including a circularly cylindrical cavity having opposing end walls and dimensioned to support the TM_{020} mode at a desired frequency of operation, a first plurality of said oscillators magnetically coupled to said cavity around the periphery thereof where the electric field is at a null and a second plurality of said oscillators magnetically coupled to said cavity around a ring coincident with the first spatial null of the electric field, the improvement comprising a plurality, similar in number to the second plurality of coaxial diode oscillators, of electrically conductive bridges interposed between the coaxial diode oscillators in said second plurality thereof and connected between the opposing end walls of the circularly cylindrical cavity.

4,470,022

PSEUDO ATMOSPHERIC NOISE GENERATOR HAVING VARIABLE AMPLITUDE PROBABILITY DISTRIBUTIONS AND DISCHARGE FINE STRUCTURE

Roger K. Cernius; Don M. French, both of El Cajon; Paul A. Singer, Santee; Donald J. Adrian, Leucadia, and Donald I. Parsons, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1982, Ser. No. 391,624
Int. Cl.³ H03B *29/00*
U.S. Cl. 331—78 **8 Claims**



1. An apparatus for producing VLF/LF atmospheric noise signals having a given amplitude probability distribution and temporal pulse characteristics comprising:

means for generating a psuedo-random noise carrier signal;

means for generating a discharge envelope representative of cloud-to-ground discharges, intra-cloud discharges, the discharge rate, strokes per discharge, and discharge fine distribution;

means for initiating the discharge envelope generating means being operatively coupled thereto and having means for reprogrammably providing signals representative of the average discharge rate, the average number of impulses per discharge, the average amplitude of strokes in the discharge and the discharge fine structure;

means coupled to the pseudo-random noise carrier generating means and the discharge envelope generating meand for multiplying their signals to provide at least a part of an envelope modulated carrier signal; and

means connected to the multiplying means for receiving the envelope modulated carrier signal.

4,470,023

COHERENT ARRAY OF JOSEPHSON OSCILLATORS WITH EXTERNAL BIAS LEADS

James E. Lukens; Aloke K. Jain, both of Stony Brook, and Paul M. Mankiewich, East Setauket, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

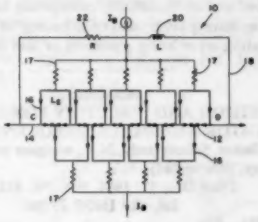
Filed Apr. 29, 1981, Ser. No. 258,705
The portion of the term of this patent subsequent to Aug. 29, 2001, has been disclaimed.
Int. Cl.³ H03B *15/00*; H01L *39/14*
U.S. Cl. 331—107 S **7 Claims**

1. Apparatus suitable for use as a tunable, wideband microwave oscillator comprising:

a line array of a plurality of hysteresis-free Josephson junctions selectively spaced along a longitudinal axis;

a source of biasing current;

a plurality of interlocking superconducting loops of an inductance L_2, having superconducting biasing leads extending substantially transverse to said longitudinal axis and connected to said source of biasing current, said loops being shunted across adjacent pairs of said hysteresis-free Josephson junctions to produce equal and opposite dc bias voltages across said adjacent pairs of said hysteresis-free Josephson junctions to provide a common frequency of operation; and



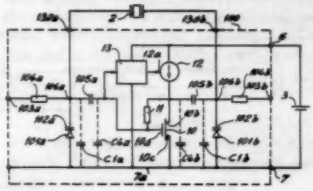
a feedback loop, having an inductance L, shunted around the ends of said array to produce a circulating rf current through said array to provide phase coherence.

4,470,024

INTEGRATED CIRCUIT FOR A CONTROLLABLE FREQUENCY OSCILLATOR

Claude-Eric Leuenberger, Chezard, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Mar. 15, 1982, Ser. No. 357,870
Claims priority, application France, Mar. 24, 1981, 81 06050
Int. Cl.³ H03B *5/36*; H03J *3/18*
U.S. Cl. 331—108 D **8 Claims**



1. A single chip MOS integrated circuit for a controllable frequency oscillator comprising:

a semiconductor substrate of one type of conductivity;

two first terminals for connection to a resonator;

two second terminals for connection to an electrical power supply source; and

a circuit formed on said semiconductor substrate and connected to said first and second terminals for establishing and sustaining the oscillations of a resonator connected to said two first terminals, said circuit comprising at least one active element connected to said first and second terminals, at least one control terminal, and means connected to said active element and said control terminal for adjusting the frequency of the oscillation of the resonator in dependence on a control signal applied to said control terminal, said adjusting means comprising:

at least one adjustable capacitor having a capacitance which varies continuously in dependence on a voltage applied thereto, said capacitor being connected to said active element for determining the frequency of the oscillations of the resonator in dependence on said capacitance, said adjustable capacitor comprising a first and a second semiconductor region of opposite conductivity types arranged relative to each other for forming a junction therebetween, said second semiconductor region being a diffusion portion formed in a superficial zone of said chip; and

means responsive to said control signal for applying to said adjustable capacitor a voltage, the value of which is determined in dependence on said control signal; and further comprising:

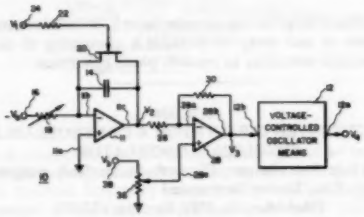
a decoupling capacitor connected between said adjustable capacitor and said active element, said decoupling capacitor comprising an insulating layer covering one of said regions and an electrically conducting layer for covering said insulating layer, said chip having an oxide layer, said insulating layer being a portion of said oxide layer.

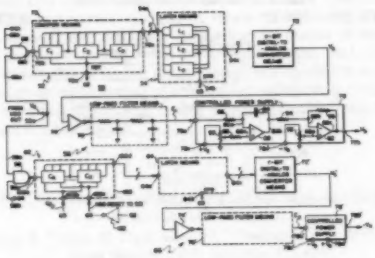
4,470,025

METHOD AND CIRCUITRY FOR CHIRPED OSCILLATOR AUTOMATIC FREQUENCY CONTROL

Lewin T. Baker, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,491
Int. Cl.³ H03B *23/00*
U.S. Cl. 331—178 **26 Claims**





1. A method for controlling the initial frequency of a chirped oscillator, comprising the steps of:

(a) counting the number of cycles in the chirped oscillator waveform during a chirp period;

(b) generating an error signal responsive to the counted number of cycles relative to the desired number of cycles in the chirp period;

(c) comparing the magnitude of the error signal to the magnitude of a signal establishing a predetermined initial frequency; and

(d) adjusting the oscillator initial frequency in accordance with the results of the comparing step (c) to reduce the error signal substantially to zero.

4,470,026

ACOUSTICAL WAX ON A SURFACE WAVE DEVICE

Pol Buckinx, Diepenbeek, and Mieke Jacobs, Heverlee, both of Belgium, assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 1, 1982, Ser. No. 344,456
Claims priority, application Belgium, Dec. 14, 1981, 01658
Int. Cl.³ H03H *9/145, 9/64*
U.S. Cl. 333—194 **6 Claims**

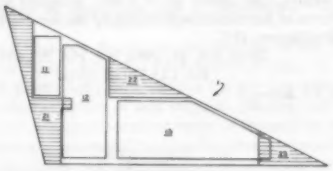
1. A surface acoustic wave filter comprising:

a generally triangularly-configured piezoelectric substrate,

an electrically conductive input transducer deposited on the substrate,

an electrically conductive output transducer deposited on the substrate,

an electrically conductive third transducer deposited on the substrate and positioned generally intermediate the input and the output transducers, and



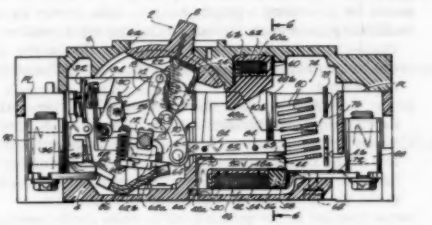
an acoustic wax coating covering at least a moiety of the filter, including portions of the substrate, the input transducer, and the third transducer.

4,470,027

MOLDED CASE CIRCUIT BREAKER WITH IMPROVED HIGH FAULT CURRENT INTERRUPTION CAPABILITY

Donald A. Link, Hubertus; John A. Swessel, Jr., Milwaukee, and Peter J. Theisen, West Bend, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 16, 1982, Ser. No. 399,086
Int. Cl.³ H01H *77/02*
U.S. Cl. 335—16 **22 Claims**



1. A circuit breaker comprising, in combination:

an insulating housing;

elongated stationary contact support means disposed in said housing and having a stationary contact at one end;

a movable contact carrier rotatably supported in said housing;

an elongated movable contact arm attached to said carrier for pivotal movement relative to said carrier and having a moveable contact at one end;

means biasing said movable contact arm for integral rotary movement with said carrier;

operating means for manually operating said carrier to open and closed positions, said movable contact arm being disposed substantially parallel to and co-extensive with said stationary contact support means in the closed position;

means connecting said stationary contact support means and said movable contact arm in an electric circuit for effecting current flow in opposite directions therein when said contacts are in said closed position wherein currents in said stationary contact support means and said movable contact arm greater than a predetermined value generate electromagnetic forces for effecting pivoting movement of said movable contact arm relative to said carrier and away from said stationary contact support means for separating said contacts; and

flux amplifier means forming a magnetically closed loop around said stationary contact support means and said

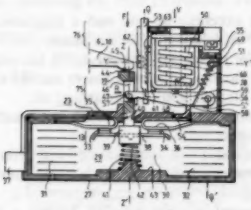
movable contact arm for amplifying said electromagnetic forces.

4,470,028

MECHANICALLY CONTROLLED SWITCH WITH AUTOMATIC OPENING

Roger Vayre, Nanterre, and Christian Thomas, Montesson, both of France, assignors to La Telemecanique Electrique, France

Filed Nov. 9, 1982, Ser. No. 440,461
Claims priority, application France, Nov. 9, 1981, 81 20924
Int. Cl.³ H01H 73/64
U.S. Cl. 335—16 5 Claims



1. A switching apparatus comprising:

a-an insulating casing;

b-at least one removable insulating cartridge mounted in said casing and, housed in said cartridge;

i-a breaking chamber having fins for fractionating the arcs;

ii-a power switch placed in the breaking chamber and having at least one fixed contact, one mobile contact and a fixedly mounted pressure spring tending to apply the mobile contact against the fixed contact;

iii-circuit means having terminals located outside the casing and, serially connected in said circuit means within the cartridge, the said power switch and a coil;

iv-a magnetizable striker cooperating with said coil for being displaced from a rest to an actuated position when a short circuit current is flowing through the said circuit means;

v-pushbutton means having an outer portion which projects into the casing out of the cartridge and an inner portion cooperating with the mobile contact and displaceable from a rest position in which the power switch is closed to first and second actuated positions in which the power switch is open, the second actuated position being more remote from the rest position than the first actuated position.

vi-and mechanical transmission and locking means, cooperating with the striker in the actuated position of the striker and with the pushbutton means to displace the pushbutton means from its rest position to its second actuated position and to lock the pushbutton means into its second actuated position;

c-control means housed in the casing outside the cartridge and having a mobile control part which cooperates with the outer portion of the pushbutton means to displace it from its rest position to its first actuated position;

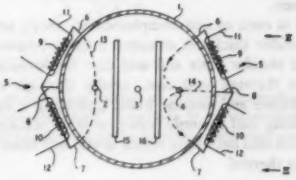
d-disabling means, cooperating with the said mechanical transmission and locking means when the striker is in its actuated position for disabling the said control means; said cartridge and said casing having cooperating guiding and holding means for positioning the cartridge within the casing, and detachably cooperating electrical connecting means which are part of said circuit means.

4,470,029

CONVERGENCE UNIT FOR IN-LINE COLOR CATHODE RAY TUBE

Brian D. Chase, Eastleigh, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,397
Claims priority, application European Pat. Off., Mar. 31, 1982, 82301683.7
Int. Cl.³ H01F 7/00
U.S. Cl. 335—210 8 Claims



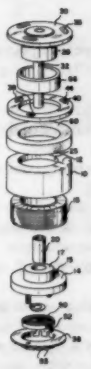
1. A convergence unit for an in-line color cathode ray tube comprising a pair of E-shaped magnetic cores each carrying a pair of independent windings by means of which a magnetic field is used to shift one or both of the outer beams of the cathode ray tube to correct for misconvergence, characterized in that each E-shaped core has two limbs extending from a central pole piece to end pole pieces, the length of the limbs being significantly larger than the lengths of the pole pieces, and in that the windings are located around said limbs with the axis of each winding extending substantially parallel to a tangent to the cathode ray tube neck whereby magnetic fields due to individual turns reinforce the magnetic fields between the pole pieces, and in that each winding extends over more than one limb.

4,470,030

TRIP SOLENOID

John L. Myers, Tipp City, Ohio, assignor to Ledex, Inc., Vandalia, Ohio

Filed May 18, 1983, Ser. No. 495,891
Int. Cl.³ H01F 7/08
U.S. Cl. 335—228 6 Claims



1. A rotary solenoid actuator comprising:

a generally cup-shaped case,

an electric energizing coil received within said case,

a base received in said case and fixed thereto,

a central bore formed in said base for receiving an armature shaft,

means in the end of said cup defining an armature opening,

an armature received in said opening with a shaft thereon

extending through said base opening for rotation with respect to said base,

a generally cylindrical plate attached for rotation with said armature exteriorly of said case and in spaced relation thereto,

means in said plate defining a plurality of arcuately extending axially inclined ball races,

an annular plate formed in underlying relation to said cylindrical plate and having means therein defining complementary inclined ball races for receiving a ball therebetween,

a ball in each of said complementary races, and

an annular thickness oriented magnet positioned between said annular plate and said case for forming a flux flow path through said case, axially through said base and armature and annular plate, providing a magnetic latch holding said solenoid armature in an actuated position in which said balls have rolled in said ball races to the deeper ends thereof.

4,470,031

MULTIPOLAR MAGNETIZING DEVICE FOR PERMANENT MAGNETS

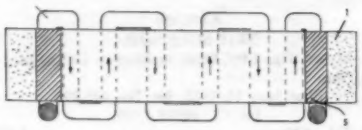
Erich Steingroever, Flensburger Strasse 33, 53 Bonn, and Dietrich Steingroever, Bergisch-Gladbach, both of Fed. Rep. of Germany

Filed Sep. 28, 1982, Ser. No. 425,176

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214176

Int. Cl.³ H01F *13/00*

U.S. Cl. 335—284 **19 Claims**



1. A multipolar magnetizing device for producing magnetic poles of alternating polarity in a permanent magnet body, comprising:

a supporting body having a surface configured to closely conform with the surface of the magnet body to be magnetized;

said supporting body being composed entirely of electrically insulating material;

a plurality of conductors of low electrical resistivity spaced from each other to define magnetic poles between adjacent pairs of said conductors;

said supporting body having apertures extending therethrough;

each aperture receiving one of said plurality of conductors to prevent displacement of said plurality of conductors when energized by a high current electrical impulse, and;

means for connecting said plurality of conductors with a source of said electrical impulse so as to direct current in opposite directions through adjacent ones of the conductors defining said poles; said plurality of conductors being supported entirely by said supporting body; whereby alternating magnetic poles may be induced in a permanent magnet body without the use of a permanent magnet return path thus allowing use of very narrow poles in permanent magnet bodies having relatively small dimensions.

4,470,032

MAGNETIC CHUCK

Walter Hernandez, 6925 W. 3rd Ct., Hialeah, Fla. 33014, and Luis E. Saumell, 6318 SW. 23 St., Miami, Fla. 33155

Filed Feb. 25, 1983, Ser. No. 439,918

Int. Cl.³ H01F *7/20*

U.S. Cl. 335—288 **1 Claim**

1. A magnetic chuck for use in grinding optical lenses consisting of:

(a) a housing sized for compatible use in a lens grinding machine,

said housing exposing at one end a magnetic attachment surface for attachment of a lens piece,

(b) a means for increasing or decreasing the magnetic force exerted by the magnetic attachment surface consisting of,

a permanent magnet housing consisting of,

two magnetizable halves separated and bonded to a non-magnetizable seam,

said magnetizable half and seam define a cylindrical cavity of a diameter sized to snugly house a rotatable permanent magnet,

said permanent magnet housing having a threaded set screw through hole,

said permanent magnet housing having a side defining a magnetizable attachment surface with two orienting tips protruding perpendicularly from the plane of said surface for attachment of a lens piece,

a permanent magnet having a first end, a second end, a set of oppositely facing curved sides, and a set of oppositey facing flat sides,

said first end being snugly and magnetizably held by a magnet holder and said second end resting against a side wall of the permanent magnet housing,

said set of oppositely facing curved sides defining a width substantially equal to but less than the diameter of the permanent magnet housing cavity and in curved relationship to said diameter,

said set of oppositely facing flat sides defining a height less than that of the width of and approximately equal to one-half the width,

a magnet holder having a first end and a second end,

said first end having two oppositely facing half-moon shaped legs separated by a distance approximately equal to that of the heighth of the permanent magnet so that the half-moon shaped legs hold the permanent magnet securely in place,

said second end being adapted for a means of manual rotation of the magnet holder and the magnet either clockwise or counterclockwise,

said magnet holder being made of a magnetizable material so that there is a magnetic bond fixing the magnet holder to the permanent magnet,

a means for manually rotating the magnet holder from outside the chuck housing,

a set screw in threaded engagement with the threaded set screw hole in the permanent magnet housing and extending to protrude from the wall of the cylindrical cavity within the permanent magnet housing and defining a means for limiting the rotation of the magnet and defining a first position and a second position,

said first position defined as the position where the curved sides of the permanent magnet are in contact with the seam,

said second position of the magnet defined as the position where the magnet is rotated 90° from the first position and the curved sides are in full contact with each of the magnetizable halves of the permanent magnet housing,

(c) a lens piece comprising a disc-shaped raw glass lens blank of predetermined diameter and thickness and a magnetizable metal disc of predetermined thickness and diameter,

said raw glass blank disc and magnetizable metal disc being fixed together in axial symmetry by a bonding means such that they can be separated without damaging either the raw glass blank disc or the magnetizable metal disc,

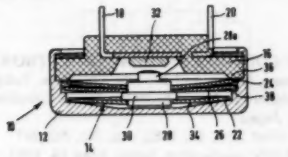
said magnetizable metal disc having two orienting recesses on opposite sides at equal distance from the axis of a lens piece,

said recesses being sized to receive the two orienting tips extending perpendicularly from the magnetic attachment surface.

4,470,033
THERMAL SWITCH

Peter Hofsäss, Strietweg 45, 7530 Pforzheim, Fed. Rep. of Germany

Filed Aug. 18, 1982, Ser. No. 409,057
Int. Cl.³ H01H *37/74*
U.S. Cl. 337—343 **17 Claims**



1. A thermal switch comprising a bimetal snap action disk means for carrying out a switching operation, electrical contacts, at least one first snap action disk means associated with said bimetal snap action disk means for ensuring a sufficient force application between the electrical contacts of the switch when the switch is in a closed position to thereby enable the bimetal snap action disk means to only carry out the actual switching operation, a second spring snap action disk means associated with said bimetal snap action disk means and said first spring snap action disk means, said first and second spring snap disk means are in the form of two pre-embossed spring members, said first and second spring action disk means being arranged such that respective spring forces thereof generated during a displacement from a normal rest position are, at least at a switching point of the bimetal snap action disk means, directed in opposition to each other, whereby the bimetal snap action disk means need only overcome a difference in the spring forces of the first and second snap action disk means with at least a whole force of said first spring snap action disk means being effective as a pressure force for the switch in the closed position.

4,470,034
ELECTRICAL RESISTOR STRUCTURE

John B. Lopacki, North Tonawanda, and Harry R. Emes, Niagara Falls, both of N.Y., assignors to Kennecott Corporation, Cleveland, Ohio

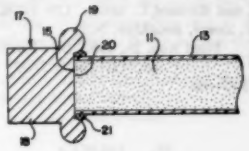
Division of Ser. No. 352,962, Feb. 26, 1982, Pat. No. 4,417,389. This application Aug. 23, 1983, Ser. No. 481,869
Int. Cl.³ H01C *1/148*
U.S. Cl. 338—332 **6 Claims**

1. An electrical resistor comprised of:

a. an elongated resistance core member having ends and periphery side portions, an impervious, electrically insulating, sealing coating on said side portions,

b. at least one electrically conductive end cap member mounted on said core,

c. said end cap member being positioned in electrical contact with the end portion only of said core member, and electrically insulated from the periphery portion of said core member by an electrically insulating packing positioned between and in contact with said end cap member and said sealing coating, and

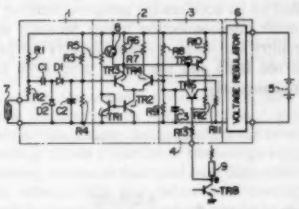


d. said end cap member having an outward-extending radial portion thereon which is arcuate in cross-section and is positioned contiguous to the junction with said core member.

4,470,035
ANALOG FUEL CONSUMPTION SIGNAL GENERATOR FOR VEHICLES

Shuichi Kosuge, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 25, 1981, Ser. No. 305,733
Claims priority, application Japan, Oct. 2, 1980, 55-138139
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—52 R **4 Claims**



1. An analog fuel consumption signal generator for vehicles comprising:

a vehicle speed detecting means for generating a pulse signal in proportion to vehicle speed;

a frequency-to-voltage converter connected to said vehicle speed detecting means to convert the frequency of the pulse signal to an analog voltage;

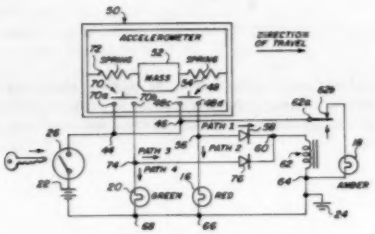
a differential amplifier connected to the frequency-to-voltage converter so that the analog signal proportional to the vehicle speed is applied to one input terminal of the differential amplifier and the output of the differential amplifier is applied via a switch, the closing time of which is proportional to consumed fuel, to the other input terminal; and

a means supplied with the output of the differential amplifier as a fuel consumption signal to indicate the fuel consumption.

4,470,036
SAFETY LIGHT WARNING SYSTEM FOR VEHICLES AND THE LIKE

John F. Doerr, 100 Lefferts Ave., Apt. 4-E, Brooklyn, N.Y. 11225, and Richard L. Miller, Dix Hills, N.Y., assignors to John F. Doerr, Brooklyn, N.Y.

Filed Aug. 29, 1983, Ser. No. 527,571
Int. Cl.[3] B60Q 1/00
U.S. Cl. 340—66 11 Claims



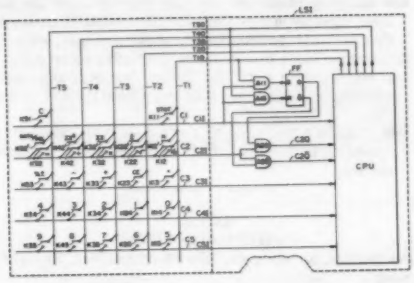
1. An automobile signal system comprising:
(a) a stop mode circuitry;
(b) a caution mode circuitry;
(c) a go mode circuitry;
(d) said stop, caution, and go modes circuitry all being capable of being energized by the automobile battery when the ignition switch is closed;
(e) said stop mode circuitry utilizing a red lamp, operative by means of the automobile brake pedal, said caution mode circuitry utilizing an amber lamp, and said go mode circuitry utilizing a green lamp operative by means of the automobile gas pedal;
(f) circuit means for interconnecting said caution mode circuitry as to be operational whenever neither the gas pedal nor the break pedal is pressed;
(g) said stop mode circuitry utilizing a relay to isolate its circuitry from the caution mode;
(h) said go mode circuitry utilizing a switch which is activated by an accelerating sensitive member, and
(i) circuit interconnection means between said stop mode circuitry and said go mode circuitry for preventing both the red lamp and the green lamp from being operated simultaneously.

4,470,037
INPUT DEVICE FOR ELECTRONIC APPARATUS

Hiroshi Takahashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 82,535, Oct. 9, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,501
Claims priority, application Japan, Jan. 17, 1979, 54-4353
Int. Cl.[3] G08C 9/00; G06F 1/00
U.S. Cl. 340—365 R 3 Claims

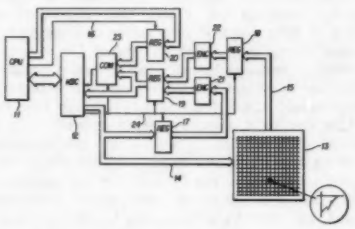
1. An input device for an electronic apparatus, comprising:
a plurality of input keys;
a first key signal line to which said input keys are connected;
a plurality of first AND gate means each having at least two inputs, one said input being connected to said first key signal line, each of said first AND gates also having an output for providing an instruction signal; and
setting means for selecting one of said first AND gate means, said setting means including memory means, connected to another input of each of said first AND gate means for producing output signals for selectively enabling any of said first AND gate means, said setting means further including a plurality of switches connected to said memory means for selecting the output signals to be produced by said memory means.



4,470,038
SHIFT CONTROL SYSTEM FOR KEYBOARDS

Katsumi Amano, Oume, and Kiyoshi Kinoshita, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 24, 1982, Ser. No. 361,247
Claims priority, application Japan, May 14, 1981, 56-71443
Int. Cl.[3] G08C 9/00
U.S. Cl. 340—365 S 7 Claims



1. A shift control system for a keyboard having plural character keys and at least one shift key arranged in a key matrix, wherein said character keys and said at least one shift key have respective positions in said matrix and said respective positions are defined by respective matrix codes, wherein a keyboard controller controls the operation of the keyboard and a central processing unit (CPU) controls operation of the keyboard controller, comprising:
notifying means for identifying the matrix code of the at least one shift key and for storing the matrix code thereof, whereby the location of said shift key in said key matrix is defined;
scanning means for scanning said key matrix and for producing matrix codes corresponding to the positions of any keys in said matrix which are depressed;
comparison means for comparing the matrix codes produced by said scanning means with the matrix code of said at least one shift key as identified by said notifying means to determine a depression of said at least one shift key, said comparison means producing a shift signal upon determining a coincidence between said matrix codes produced by said scanning means and said matrix code identified as that of said shift key;
memory means for storing said shift signal;
keycode generating means for generating a combined keycode from said shift signal stored in said memory means

and the matrix code of said character key produced by said scanning which follows the storing of said shift signal; and

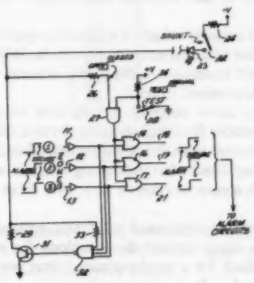
sending means for sending the keycodes from said keycode generating means to said CPU for use thereby.

4,470,039

PREMISE ALARM SHUNT ARRANGEMENT

John E. McBrian, Kinnelon, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Sep. 23, 1982, Ser. No. 422,137
Int. Cl.³ G08B 29/00
U.S. Cl. 340—514 **7 Claims**



1. A shunt switch arrangement for an alarm system which has a plurality of secure/alarm zone signal inputs and a plurality of alarm circuit outputs comprising:

means for coupling the secure/alarm zone signal inputs to the alarm circuit outputs;

shunt switch means for, in a disabling condition, disabling the coupling means from coupling the secure/alarm zone signal inputs to the alarm circuit outputs; and

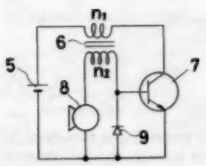
indicator means near the shunt switch means, coupled to the shunt switch means and the secure/alarm zone signal inputs, for providing an indication of an alarm zone signal at a secure/alarm zone signal input when the shunt switch means disables the coupling means.

4,470,040

MICROVIBRATION DETECTOR USING A SINGLE PIEZOELECTRIC ELEMENT AS BOTH SENSOR AND ALARM GENERATOR

Tokishi Kaminishi, Inuyama, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Nov. 4, 1981, Ser. No. 317,800
Claims priority, application Japan, Nov. 12, 1980, 55-159311
Int. Cl.³ G08B 13/00
U.S. Cl. 340—566 **6 Claims**



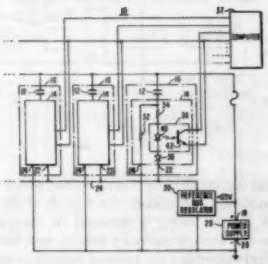
1. A microvibration detector using a single piezoelectric element as both sensor and alarm generator, comprising in combination a blocking oscillator circuit composed of a transformer provided with a primary coil and a secondary coil and a transistor having the collector thereof connected to one end of the primary coil of said transformer and the base thereof connected to one end of said secondary coil, a power source having a first electrode connected to the other end of the primary coil of said transformer and a second electrode connected to the emitter of said transistor, a sound emitter using an element having a piezoelectric effect and connected at one end thereof to the other end of the secondary coil of said transformer and at the other end thereof to the second electrode of said power source, and a diode connected at one end thereof to the base of said transistor and at the other end thereof to the second electrode of said power source.

4,470,041

EFFICIENT COMPUTER INPUT SYSTEM FOR SENSING STATUS OF HIGH VOLTAGE CONTACTS

James F. Sutherland, Pittsburgh, and Henry F. Cook, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 4, 1981, Ser. No. 318,223
Int. Cl.³ G08B 21/00
U.S. Cl. 340—644 **9 Claims**



1. An apparatus enclosed in a data collection cabinet for detecting the state of each pair of contacts in a plurality of contact pairs within said cabinet and for communicating the detected states to a computer, said apparatus comprising:

means for generating a high voltage which may be applied across each of said contact pairs when open;

a plurality of sensing means, each coupled to a corresponding one of said contact pairs for sensing the flow of current from said generating means through said corresponding contact pair when closed and for signaling said computer when current flow is sensed; and

means for limiting the voltage across each of said sensing means to a fraction of the voltage of said generating means, said limiting means having means for returning to said generating means a portion of the energy supplied by said generating means so that total heat dissipation in said cabinet is substantially less when said corresponding contact pair is closed than that which would be dissipated if the full voltage of said generating means were applied to each of said sensing means.

4,470,042

SYSTEM FOR DISPLAYING GRAPHIC AND ALPHANUMERIC DATA

Richard G. Barnich, Saline; Thomas B. Braun, Ann Arbor; Lloyd R. Lawrence, Tecumseh, and Peter C. Schmitt, Milford, all of Mich., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 6, 1981, Ser. No. 241,277
Int. Cl.³ G09G 1/16
U.S. Cl. 340—721 **17 Claims**

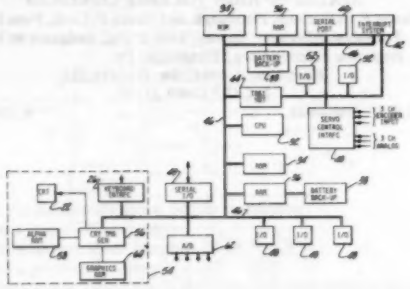
1. A device for producing electrical signals used to simultaneously display symbolic and graphical data, said device being adapted to be employed with a computer data system including a data input, a data processor and a data output display having lines and columns of electrically responsive pixels for displaying said data, comprising:

timing means for producing a plurality of timing signals;

first memory means having addressable inputs coupled with said processor for storing a plurality of first multi-bit data words therein, each of said first data words having a first subgroup of data bits corresponding to a selected symbol and a second subgroup of data bits corresponding to a modification of the data to be displayed;

second memory means having addressable inputs coupled with said processor for storing a plurality of second multi-bit data words therein each corresponding to a portion of said graphical data;

symbol generator means connected to said first memory for generating signals representing said symbols defined by said first group of data bits;



circuit means for combining video signal, said circuit means being connected to receive the signals from the symbol generator means, being connected to receive graphical data from the second memory means, and being operable to selectively combine the symbol generator means signals with the graphical data to produce an output signal in accordance with a preselected order of priority which is determined by said second subgroup of data bits received from the first storage means; and

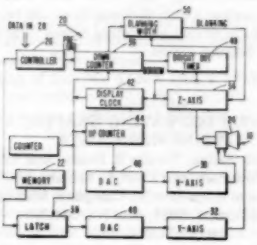
means for generating output video signals to drive said display in response to the output signal of the circuit means.

4,470,043

NON-FADE BOUNCING BALL DISPLAY

Jay R. Sorensen, Beaverton, and Richard A. Sunderland, Aloha, both of Oreg., assignors to Squibb Vitatek Inc., Hillsboro, Oreg.

Filed Mar. 1, 1982, Ser. No. 353,537
Int. Cl.³ G09G 1/00
U.S. Cl. 340—722 **6 Claims**



1. A system for providing a non-fade bouncing ball display for a CRT display system comprising:

(a) a memory unit having discrete memory locations corresponding to locations on the screen of said CRT, said memory unit holding data representative of the location and intensity of a trace to be displayed on the screen of said CRT;

(b) means for entering data, representative of a waveform which is to be displayed, into said memory locations;

(c) latch means for receiving and holding data from said memory unit;

(d) a controller for loading data into said memory unit and from said memory unit into said latch means;

(e) x-axis and y-axis circuitry for directing the electron beam to specific locations on the screen of said CRT as determined by the data in said latch means;

(f) z-axis circuitry for determining the intensity of said electron beam;

(g) a first counter which directs said x-axis circuitry during each trace of said electron beam across the face of said CRT;

(h) a second counter which is adapted to generate an output signal when said first counter has reached a predetermined count, said controller setting said second counter with said predetermined count;

(i) a display clock coupled to said first counter and said second counter for synchronizing the counting rate of said second counter with the counting rate of said first counter, said display clock also producing a signal which permits said latch means to receive new data from said memory unit;

(j) inhibit means associated with said second counter for sending a signal to said display clock for inhibiting said display clock for a predetermined time period, whereby no further data from said memory unit can be entered into said latch means during said predetermined time period, said inhibit means also sending a signal to said z-axis circuitry to increase said beam intensity during said predetermined time period, whereby a bright dot will be formed on said screen during said predetermined time period; and

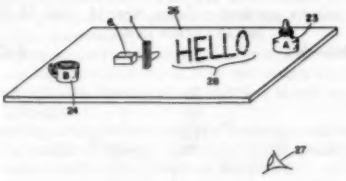
(k) blanking width circuit means for turning off said electron beam while allowing said latch means to receive updated data from said memory unit for a second predetermined time period, whereby a display frame will be formed on said CRT having a bright dot followed by a blanked hole and whereby successive ones of said frame will appear to an observer to have a moving bright dot which follows a blanked hole.

4,470,044

MOMENTARY VISUAL IMAGE APPARATUS

Bill Bell, 56 Perry St., Brookline, Mass. 02146

Filed May 15, 1981, Ser. No. 264,193
Int. Cl.³ G09G 3/00
U.S. Cl. 340—755 **9 Claims**



1. A device for presenting a two-dimensional image to an observer subject to saccadic eye movements characterized by variations in brightness across the image, comprising

a fixed, one-dimensional light source comprising an array of light source areas and capable of delivering light of selectable brightness at each one of a plurality of positions along the light source, and

a modulator for modulating the light source in accordance with said variations in brightness, over a time-period

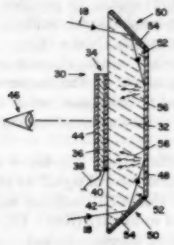
lasting between about 5 milliseconds and about 25 milliseconds for each displaying of said image.

4,470,045

DIFFUSION-LIGHTED MAGNETO-OPTIC DISPLAY

Robert H. Anderson, Long Beach, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 5, 1982, Ser. No. 375,324
Int. Cl.³ G09G 3/20
U.S. Cl. 340—783 5 Claims



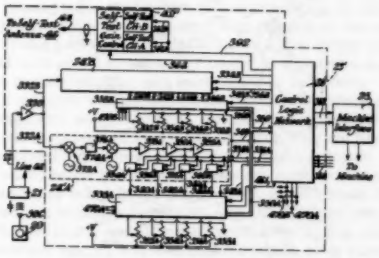
1. A diffusion-lighted display comprising:
(a) a magneto-optic display unit including:
(1) a polarization analyzer sheet;
(2) a magneto-optic chip adapted to be connected to and driven by a display driver; and
(3) a polarizer sheet;
(b) a slab of transparent material having said polarizer sheet of said magneto-optic display unit adjacent the front surface thereof and a light colored diffusion surface on the back surface thereof; and
(c) said slab having light directing means at the periphery thereof for directing front incident light into said slab and against said diffusion surface to cause diffused light from said diffusion surface to pass through said magmagneto-optic display unit.

4,470,046

CAPACITIVELY COUPLED MACHINE TOOL SAFETY SYSTEM HAVING A DIGITAL QUANTIZER

Harry E. Betsill, Timonium, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1982, Ser. No. 345,192
Int. Cl.³ H04Q 9/00; G08B 13/26
U.S. Cl. 340—825.23 2 Claims



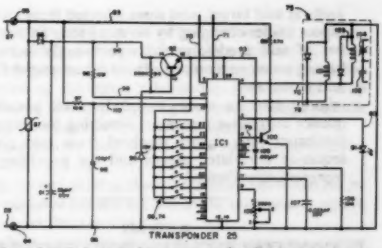
1. A machine tool safety system comprising
an electric field generator for generating an electric field having a predetermined recurrence rate;
a capacitive receptor antenna cooperable with the electric field generator to form a capacitive coupled transmission arrangement operative to induce in the capacitive antenna a signal having a corresponding recurrence rate;
a receiver for detecting the induced signal, the receiver comprising:
a network responsive to a first command for asynchronously sampling the induced signal a predetermined number of sample times during each period of the induced signal;
an analog-to-digital converter connected to the sampling network for quantizing the magnitude of the sampled signal at each sample time; and
a network responsive to a second command to remove the sampled signal value from the sampling network prior to the occurrence of the next sample time.

4,470,047

BIDIRECTIONAL, INTERACTIVE FIRE DETECTION SYSTEM

William R. Vogt, Rockaway, and John M. Wynne, Oak Ridge, both of N.J., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Feb. 4, 1982, Ser. No. 345,909
Int. Cl.³ H04Q 9/00; G08B 23/00
U.S. Cl. 340—825.36 42 Claims



1. A bidirectional, interactive communication system, comprising a controller connected to transmit a series of signal groups sequentially over a pair of electrical conductors, wherein each signal group includes a plurality of pulses, and a plurality of transponders coupled to said conductors, at least one of said transponders having means for replying to the controller by selectively modifying a portion of at least one pulse transmitted by the controller and thus encoding information on said one pulse, which reply is terminated by the controller with an overriding simultaneous transmission,
wherein the controller includes means for sampling the pulse modified by the replying transponder at regular intervals to decode the information encoded on said modified pulse, and for providing an answer signal denoting said information.

4,470,048

RANGE PROFILE TARGET CLASSIFIER

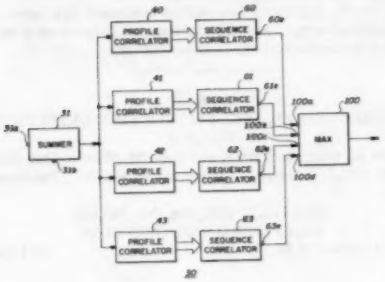
Robert D. Short, III, Littleton, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,189
Int. Cl.³ G01S 7/30, 13/78
U.S. Cl. 343—5 SA 13 Claims

1. A range profile target classifier for identifying targets according to a sequence of received range profiles observed at a plurality of aspect angles, said aspect angles having a predetermined aspect angle increment, comprising:
input means for receiving a multiplicity of discrete range profile data signals, each of said multiplicity corresponding to a discrete look at said target;
a plurality of profile correlator means coupled to said input means for comparing said received discrete range profile data signals to a plurality of reference profile data signals, each of said profile correlator means corresponding to a

predetermined target and each of said reference profile data signals corresponding to a preselected aspect of said predetermined target and for providing a correlation number representative of match between said received and said reference profile data signals;

a plurality of sequence correlator means coupled to a corresponding one of said plurality of profile correlator means for providing a signal representative of the maximum sum of said correlation numbers obtained from successive



looks at said target, said sums selected from looks having aspect angles changing by no more than an integral number of said predetermined aspect angle increment and having no more than one of said aspect angles for each of said looks; and

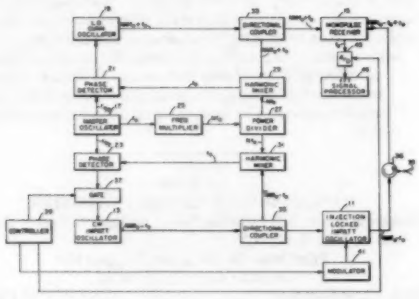
maximum detector means coupled to said plurality of sequence correlator means for detecting the largest of said maximum sum signals received from said plurality of sequence correlator means and for providing a signal representative thereof.

4,470,049

TRANSMITTER RECEIVER OPERATING AT 94 GHZ

Robert A. Phaneuf, Chelmsford, and Isaac E. Kliger, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1982, Ser. No. 356,696
Int. Cl.³ G01S 7/28
U.S. Cl. 343—17.1 R **1 Claim**



1. In a pulse transmitter/receiver for operation in the 94 GHz band with a predetermined offset between the frequency of each transmitted pulse and the frequency of a local oscillator, the improvement comprising:

(a) a crystal-controlled oscillator operating to produce a master signal at a frequency $f_o/2$, such frequency being below the 94 GHz band;

(b) frequency multiplying means, responsive to the master signal, to multiply such signal by a factor N to produce a fixed signal in the "X" band;

(c) voltage-tunable local oscillator means, nominally operating at a frequency $(NM+1)f_o$, where M is a multiplier equal to 94/N;

(d) IMPATT oscillator means, nominally operating at a frequency $(NM-1)f_o$;

(e) first harmonic mixer means, responsive to a first part of the fixed signal out of the frequency multiplier means and to a first part of the signal out of the voltage-tunable local oscillator means, to produce a first control signal nominally at a frequency f_o;

(f) first phase detector means, responsive to the master signal and to the first control signal, to produce a correction signal for the voltage-tunable local oscillator to adjust the frequency thereof to exactly $(NM+1)f_o$;

(g) second harmonic mixer means, responsive to a second part of the fixed signal out of the frequency multiplier means and a first part of the signal out of the IMPATT oscillator means to produce a second control signal nominally at a frequency f_o;

(h) second phase detector means, responsive to the master signal and to the second control signal, to produce a correction signal for the IMPATT oscillator means to adjust the frequency thereof to exactly $(NM-1)f_o$;

(i) power oscillator means, injection-locked to a second part of the signal out of the IMPATT oscillator means, to produce a signal for transmission;

(j) gating means, disposed between the second phase detector means and the IMPATT oscillator means, for periodically actuating the IMPATT oscillator means;

(k) modulator means for periodically actuating the power oscillator means; and

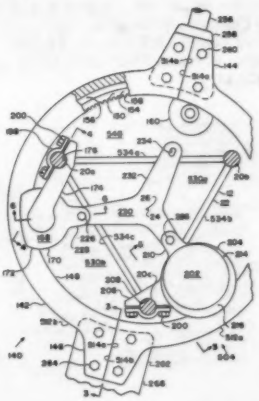
(l) controller means for synchronously enabling the gating means and the modulator means to produce pulses of radio frequency energy out of the power oscillator means, such pulses being at a frequency $(NM-1)f_o$.

4,470,050

ANTENNA ROTATOR WITH FRICTION DRIVE

Gary L. Ellingson, Thief River Falls, Minn., and Wendell E. Miller, Warsaw, Ind., assignors to Polar Research, Inc., Thief River Falls, Minn.

Division of Ser. No. 272,313, Jun. 10, 1981,. This application Mar. 23, 1983, Ser. No. 477,982
Int. Cl.³ H01Q 3/02
U.S. Cl. 343—766 **20 Claims**



1. A tower and rotationally positionable mount assembly (538) which comprises a tower (12) having three vertically-disposed tower legs (20a–20c), having bracing (22) intermediate of adjacent pairs of said tower legs that defines a plurality of

faces (534*a*–534*c*) of said tower, and having a neutral axis (26) that is disposed intermediate of said faces;

first mounting portion means (170+204) for operative attachment to one of said faces of said tower;

second mounting portion means (142), having a tower-receiving opening (548), and being disposed circumferentially around all of said tower legs, for mounting a device (256 or 266) thereto;

attaching means for supportingly attaching said second mounting portion means to said first mounting portion means, for permitting said second mounting portion means to be rotationally positioned with respect to said first mounting portion means, for vertically restraining said second mounting portion means, and for radially guiding said second mounting portion means; and

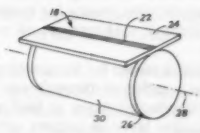
rotational positioning means, comprising a drive motor (214) that is operatively attached to one (170+204) of said mounting portion means, and comprising a friction drive element (186 or 219) that is operatively connected to said drive motor, for providing a friction drive connection between said drive motor and said other (142) mounting portion means, and for rotationally positioning said second mounting portion means.

4,470,051

MULTIPLE HEAD MAGNETIC RECORDING ARRAY

Gilbert D. Springer, Sunnyvale, Calif., assignor to Ferix Corporation, Santa Clara, Calif.

Filed May 26, 1982, Ser. No. 381,923
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.5 **4 Claims**



1. In an imaging system operatively connectable to a data input channel which is adapted to carry data defining a desired final image, with the system being of the type useable with a magnetic image-storage medium having a magnetizable facial expanse, such system having an image-producing zone through which such a medium is transportable along a known transport axis, apparatus for producing a preselected final image in such an expanse as the same is transported through such zone, which image comprises an arrangement of individual magnetic image units and image line segments formed of a plurality of linearly disposed substantially contiguous units, with adjacent units in a line segment having a first predetermined center-to-center spacing when viewed in a direction substantially parallel with the transport axis, adjacent units in adjacent line segments having a known maximum actual center-to-center spacing, and with each line segment disposed at a common angle relative to such transport axis, said apparatus comprising

plural magnetic writing heads, each capable of producing an image unit, and collectively capable of producing different line segments, disposed adjacent such zone and having an actual center-to-center spacing which exceeds the predetermined and maximum spacings mentioned above, said heads being distributed to have, when viewed in a direction substantially parallel with the transport axis, an effective center-to-center spacing equaling the first predetermined spacing whereby adjacent heads, as so viewed, are spaced to produce non-overlapping adjacent image units in a line segment, and

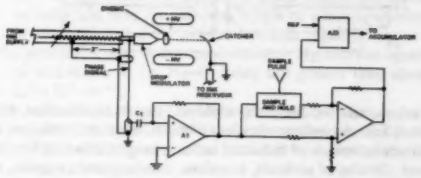
input control means operatively connected to said heads and connectable to such an input channel to receive data carried thereby, and in response to such data to generate time-coordinated head-energizing signals feedable to selective ones of said heads at appropriate times with such an expanse traveling through such a zone to effect recording on the expanse of image units and line segments filling an area which is directly related, geometrically, to the desired final image.

4,470,052

A-C COUPLED, MODULATOR BASED, PHASE-ERROR SENSING FOR IJP

Kenneth T. Lovelady, Irving, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Continuation of Ser. No. 252,726, Apr. 10, 1981, abandoned. This application Feb. 1, 1983, Ser. No. 462,741
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 **2 Claims**



1. A phase sensing and control circuit for use with an ink jet printer having a drop modulator driven by a drive current and a charging electrode driven by a charging waveform, the circuit controlling the phase relationship between the drop breakoff time and the drop charging electrode voltage pulse in an ink jet printer system, said circuit comprising:

an ink supply line for feeding ink to the ink jet drop modulator;

a charging current sensing electrode connected to the ink jet drop modulator for sensing the phase relationship signals at the ink jet drop modulator;

a DC blocking capacitor connected to said charging current sensing electrode;

amplifier means connected to said DC blocking capacitor, said DC blocking capacitor blocking offset voltages from said amplifier to said charging current sensing electrode;

means connected to the ink jet drop modulator for electrically isolating the ink from the drop modulator drive current;

means for grounding said ink supply line a distance from said charging current sensing electrode on the ink jet drop modulator so that the impedance of the ink has a resistance of approximately ten times the input impedance of said amplifier means;

a zero-charge storage circuit connected to said amplifier means for storing a zero-charge reference signal;

means connected to said zero-charge storage circuit for comparing the detected phase relationship signal and said zero-charge reference signal for generating a comparison signal; and

means for applying said comparison signal to the charging waveform on the charging electrode of the ink jet printer to thereby correct the phase relationship between the drop breakoff time and the charging waveform.

4,470,053

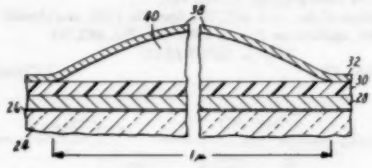
PROTUBERANT OPTICAL RECORDING MEDIUM

Kent N. Maffitt, Minneapolis; William B. Robbins, Maplewood, both of Minn., and Richard F. Willson, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 234,111, Feb. 13, 1981, Pat. No. 4,430,659. This application Jan. 24, 1983, Ser. No. 460,185
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **22 Claims**

1. A recording medium for use with a focused laser beam,

said recording medium having a substrate, a light-absorbing layer for absorbing light from the laser beam in localized regions to thereby provide information storage an optical spacer layer between said light-absorbing layer and said substrate and a reflecting layer between the substrate and the optical spacer layer, which layers in combination have a total effective optical thickness to result in an antireflecting structure, and wherein said light-absorbing layer comprises a refractory material selected from the group consisting of boron, borides of



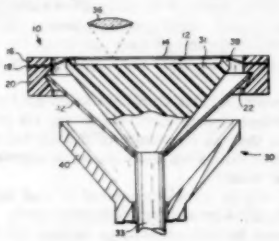
carbon, silicon, hafnium, niobium, tantalum, titanium, tungsten, and zirconium, nitrides of boron, hafnium, tantalum and titanium, oxides of hafnium, cerium, magnesium and thorium, and silicides of niobium, tantalum, titanium, and tungsten, and having a thickness of less than 60 nm and a plasticity sufficient to allow plastic deformation upon localized heating resulting from impingement by said laser beam to enable the formation of localized protuberances which can subsequently be optically detected due to an appreciably increased effective optical thickness.

4,470,054

OPTICAL DISC WRITE/READ APPARATUS WITH DISC MOUNTING MEANS

Joseph J. Wrobel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 25, 1982, Ser. No. 436,237
Int. Cl.³ G01D *15/32*; G11B *5/16*; B23B *31/18*
U.S. Cl. 346—137 **14 Claims**



1. Optical disc write and/or read apparatus adapted for use with an optical disc assembly which includes (1) a flexible, disc-shaped support carrying a record layer and (2) an annular retaining ring engaging the support around its peripheral region; said apparatus comprising

(a) lens means for focusing light at a focal plane normal to a predetermined axis;

(b) an annular locating surface rotatable about said axis in a plane normal to said axis;

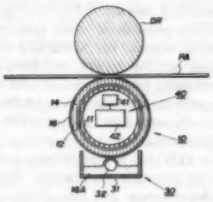
(c) annular spring means having an inner region mounted integrally with said locating surface and an outer region adapted to engage the annular retaining ring of an optical disc assembly such as to apply a force to the retaining ring to center the ring and to bring the support into a predetermined abutting force against said locating surface to provide firm contact between the disc assembly support and said locating surface.

4,470,055

PHOTO-THERMAL INK TRANSFERRING DEVICE

Hidemasa Todoh, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 472,661
Claims priority, application Japan, Mar. 10, 1982, 57-37581; Mar. 10, 1982, 57-37582
Int. Cl.³ G01P *15/10*
U.S. Cl. 346—140 R **12 Claims**



1. A photo-thermal ink transferring device comprising ink transferring means having a transparent base member, a transparent electrically-conductive layer, a photoconductive layer and a inking material layer, said layers being formed sequentially on said base member, said inking material being in its solid state at room temperature and having a heat-fusing and electrically-semiconductive properties;

paper pressing means for pressing a printing medium onto which image is transferred against said inking material layer on said ink transferring means;

electric current flowing means for making an electric current flow through said transparent and inking material layers; and

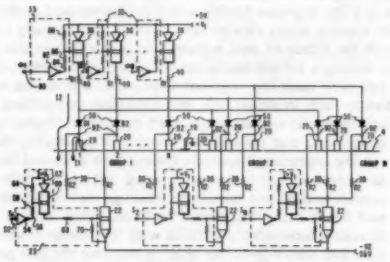
image illuminating means for illuminating light representing image to be transferred through said base member and electrically-conductive layer at least on the area of said photoconductive layer in contact with the ink material layer against which said printing medium is pressed.

4,470,056

CONTROLLING A MULTI-WIRE PRINTHEAD

Louis V. Galetto, Charlotte, N.C., and James M. Rakes, Leander, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1981, Ser. No. 335,481
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—154 **10 Claims**



1. Circuit apparatus for selectively energizing individual wires in an electroerosion printhead for forming marks on grounded metal coated paper including a plurality of wires adjacent the metal coated paper and arranged in M groups having an equal number N wires comprising:

M selector transistors for selecting a group M of wires;

N transistor switches for selecting individual wires in a group M;

means for generating a first current from ground through the metal coated paper and each non-selected wire into a negative potential source to make a mark; and

means for generating a second current from a positive potential source and bypassing the metal coated paper wire junction to avoid making a mark.

4,470,057

THERMALLY-RESPONSIVE RECORD MATERIAL

Kenneth D. Glanz, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 401,678, Jul. 26, 1982, abandoned. This application Mar. 24, 1983, Ser. No. 478,199

Int. Cl.³ B41M 5/18

U.S. Cl. 346—209 11 Claims

1. A thermally-responsive record material comprising a support member bearing a thermally-sensitive color-forming composition comprising chromogenic material and acidic developer material in contiguous relationship, whereby the melting or sublimation of either material produces a change in color by reaction between the two, a phenylhydroxynaphthoate compound selected from the group consisting of phenyl-1-hydroxy-2-naphthoate, phenyl-3-hydroxy-2-naphthoate and mixtures thereof, and a suitable binder therefor.

4,470,058

PRESSURE-SENSITIVE RECORDING SHEET

Jerome R. Bodmer, Appleton, and John H. Peters, Kaukauna, both of Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Jun. 28, 1982, Ser. No. 392,868

Int. Cl.³ B41M 5/22

U.S. Cl. 346—212 8 Claims

1. A pressure-sensitive record sheet material comprising a support sheet having bound on the surface thereof a first composition comprising a color developing material selected from the group consisting of an oil-soluble, phenol-formaldehyde novolak resin and an oil-soluble metal salt of a phenol-formaldehyde novolak resin, and a second composition comprising substantially nonreactant pigment material bound on the surface of the said first composition.

4,470,059

GALLIUM ARSENIDE STATIC INDUCTION TRANSISTOR

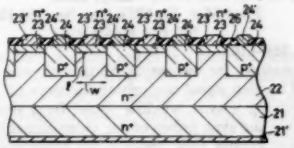
Jun-ichi Nishizawa, and Tadahiro Ohmi, both of Sendai, Japan, assignors to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 104,144, Dec. 17, 1979, abandoned. This application Apr. 19, 1982, Ser. No. 369,606

Claims priority, application Japan, Jan. 22, 1979, 54-6355

Int. Cl.³ H01L 29/80

U.S. Cl. 357—22 10 Claims



1. A gallium arsenide normally off static induction transistor formed in a chip having a first and a second main surface and responsive to a forward gate bias, comprising:

an n type high resistivity gallium arsenide region having a donor concentration N_D and disposed adjacent to said first main surface;

a first n type low resistivity gallium arsenide region formed in said high resistivity gallium arsenide region adjacent to said first main surface;

a second n type low resistivity gallium arsenide region formed adjacent to said high resistivity gallium arsenide region on the side opposite to said first main surface; and

a p type low resistivity gallium arsenide gate region formed in said high resistivity gallium arsenide region adjacent to said first main surface, and substantially surrounding said first n type low resistivity gallium arsenide region, and extending toward said second main surface farther than said first n type low resistivity gallium arsenide region, and defining a channel region of a length l and a width w in said high resistivity gallium arsenide region said width w being less than the diffusion length of minority carriers in said high resistivity gallium arsenide region,

the product of said donor concentration N_D and the square of said width w, i.e. $N_D w^2$, being not greater than about $2.5 \times 10^7\ cm^{-1}$,

the ratio of said length l to said width w, i.e. l/w, being not smaller than about 1.0 and not greater than about 2.0,

thereby establishing a potential barrier in said channel region at zero gate bias.

4,470,060

LIQUID CRYSTAL DISPLAY WITH VERTICAL NON-SINGLE CRYSTAL SEMICONDUCTOR FIELD EFFECT TRANSISTORS

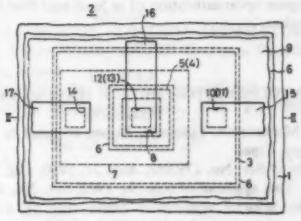
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1982, Ser. No. 338,658

Claims priority, application Japan, Jan. 9, 1981, 56-1767; Jan. 9, 1981, 56-1768; Oct. 29, 1981, 56-174120

Int. Cl.³ H01L 27/02, 29/78, 49/02, 27/10

U.S. Cl. 357—41 28 Claims



1. Apparatus with an FET, comprising:

a first semiconductor layer formed on a substrate;

a second semiconductor layer formed on the first semiconductor layer;

a third semiconductor layer formed on the second semiconductor layer;

a first insulating layer extending on the side surface of the second semiconductor layer; and

a first conductive layer extending on the first insulating layer in opposing relation to the side surface of the second semiconductor layer;

wherein the first, second and third semiconductor layers are formed of a non-single crystal semiconductor doped with a dangling bond neutralizer; the first and third semiconductor layers have the same conductivity type; and the second semiconductor layer has a higher resistivity than the first and third semiconductor layers; and

wherein the FET is constituted using the first and third semiconductor layers as either one of the drain and source and the other of them, the second semiconductor layer as channel region, the first conductive layer as a gate elec-

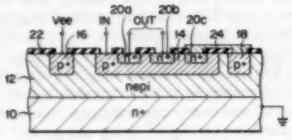
trode and the first insulating layer as a gate insulating layer.

4,470,061

INTEGRATED INJECTION LOGIC

Masanori Nakai, Ebina, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 31, 1981, Ser. No. 336,275
Claims priority, application Japan, Jan. 13, 1981, 56-3630
Int. Cl.³ H01L *27/04*; H03K *19/091*
U.S. Cl. 357—46 **3 Claims**



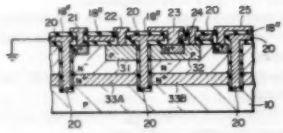
1. An integrated injection logic comprising:
a first semiconductor region of first conductivity type;
a second semiconductor region of second conductivity type formed in said first semiconductor region;
a plurality of third semiconductor regions of first conductivity type formed in said second semiconductor region;
a fourth semiconductor region of second conductivity type formed in said first semiconductor region; and
a fifth semiconductor region of second conductivity type which is formed in said first semiconductor region and in the vicinity of said second semiconductor region, and which is connected to one of said plurality of third semiconductor regions,
said first semiconductor region, said second semiconductor region and said fifth semiconductor region comprising a transistor that eliminates minority carriers stored in said first semiconductor region and said second semiconductor region upon saturation of at least said first semiconductor region.

4,470,062

SEMICONDUCTOR DEVICE HAVING ISOLATION REGIONS

Akira Muramatsu, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 179,983, Aug. 21, 1980, Pat. No. 4,369,565.
This application Sep. 30, 1982, Ser. No. 429,541
Claims priority, application Japan, Aug. 31, 1979, 54-110423
Int. Cl.³ H01L *27/04*
U.S. Cl. 357—50 **5 Claims**



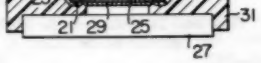
1. A semiconductor device comprising
a semiconductor substrate;
a semiconductor epitaxial layer overlying one face of said semiconductor substrate;
a groove extending from a main surface of said epitaxial layer into said semiconductor substrate through said epitaxial layer and dividing said epitaxial layer into a plurality of island parts;
a first insulating film formed on the surface of said groove and on the surfaces of said island parts;
a semiconductor layer, serving as an electrode to provide a fixed potential, formed on said first insulating film so as to continuously extend over said groove and said plural island parts, said semiconductor layer filling said groove so as to have its surface substantially flat;
a plurality of holes, corresponding to circuit elements formed in each of the island parts, formed in said semiconductor layer, leaving a remaining semiconductor layer which continuously extends over said groove and said plural island parts except for said holes;
a second insulating film formed on said remaining semiconductor layer; and
electrode layers for circuit elements which are formed in each of said island parts, said electrode layers being formed on said second insulating film so as to extend over a portion of said semiconductor layer into the corresponding hole of said semiconductor layer.

4,470,063

COPPER MATRIX ELECTRODE HAVING CARBON FIBERS THEREIN

Hideo Arakawa; Keiichi Kuniya; Takashi Namekawa, and Masabumi Ohashi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1981, Ser. No. 322,699
Claims priority, application Japan, Nov. 19, 1980, 55-162022
Int. Cl.³ H01L *23/48, 29/40, 23/02, 29/46*
U.S. Cl. 357—67 **16 Claims**



1. A semiconductor device comprising:
(a) a semiconductor substrate having at least one pn-junction;
(b) at least one electrode for supporting said semiconductor substrate, said electrode being made of a composite material in which carbon fibers are embedded in a ring-like shape in a copper matrix, the plane of the ring-like shape being substantially parallel with the surface of said electrode for supporting said semiconductor substrate; wherein at least the carbon fibers embedded in an outer peripheral portion of said electrode having a greater longitudinal elastic modulus than that of the carbon fibers embedded in a central portion of said electrode; and
(c) brazing material for attaching said electrodes to said semiconductor substrate.

4,470,064

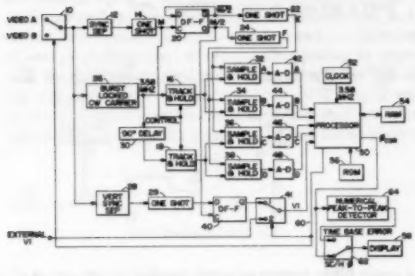
HORIZONTAL SYNC TO SUBCARRIER PHASE MEASUREMENT METHOD AND APPARATUS

James A. Michener, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Mar. 31, 1982, Ser. No. 364,154
Int. Cl.³ H04N *9/62*
U.S. Cl. 358—10 **22 Claims**

1. A method for measuring horizontal sync to subcarrier phase of a video signal comprising the steps of:
a. receiving a sync window signal from the video signal having the sync pulses of the video signal inhibited for a period greater than one-half the horizontal sync period and less than the horizontal sync period;
b. generating two complementary signals each having a period substantially equal to twice the horizontal sync period in response to the signal received in step a;
c. receiving a cw carrier signal having its phase locked to the burst of the video signal;

d. generating four sampled sine wave signals in quadrature phase, each having the same frequency as the subcarrier, from the signals of steps a, b, and c;



e. measuring the value of each of the four sine wave signals of step d at the occurrence of the leading edge of the sync window signal of step a; and

f. calculating the horizontal sync to subcarrier phase from the four measured values of step e.

4,470,065

ADAPTIVE ERROR CONCEALMENT USING HORIZONTAL INFORMATION DETERMINATION FROM ADJACENT LINES

Glenn A. Reitmeier, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1982, Ser. No. 361,800

Int. Cl.³ H04N *9/491, 5/78*

U.S. Cl. 358—21 R **9 Claims**

$$\begin{array}{ccc} \gamma_T(n-1) & \gamma_T(n) & \gamma_T(n+1) \\ 0 & 0 & 0 \\ \gamma_B(n-1) & \gamma_B(n) & \gamma_B(n+1) \\ 0 & X & 0 \\ 0 & 0 & 0 \\ \gamma_B(n-1) & \gamma_B(n) & \gamma_B(n+1) \end{array}$$

1. A method for concealing errors in a sampled video signal, said method comprising determing the relative change in sample amplitude from samples aligned in a selected direction proximate an erroneous sample, and providing a replacement sample for said erroneous sample by averaging the amplitude of samples proximate said erroneous sample aligned in said selected direction if said relative amplitude change in said selected direction is less than a predetermined threshold level and averaging the amplitude of samples proximate said erroneous sample aligned in another direction if said relative amplitude change is greater than said predetermined threshold level.

4,470,066

CIRCUIT ARRANGEMENT FOR ADJUSTING THE DIRECT CURRENT LEVEL OF A VIDEO SIGNAL

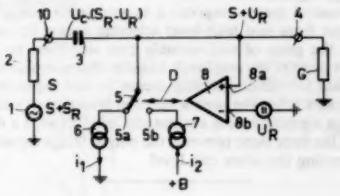
Jörg Wölber, Pinneberg; Dieter J. Kunze, Kaltenkirchen; Friedrich E. Hahn, and Walter Demmer, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,452

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117457; Apr. 21, 1982, 3214756

Int. Cl.³ H04N *5/16*

U.S. Cl. 358—171 **8 Claims**



1. A circuit arrangement for controlling the direct current level of a video signal comprising a limit value stage for deriving from the video signal a periodic switching signal, a storage means and a storage means charging/discharging circuit which by means of the switching signal, provides charging or discharging of the storage means to control the direct current level by means of a value stored in the storage means, characterized in that the limit value stage produces a switching signal in which the duty cycle depends on the direct current level of the video signal and the switching signal causes in each period a charging and a discharging of the storage means so that the control is a duty cycle control.

4,470,067

AUTOMATIC GAIN CONTROL APPARATUS

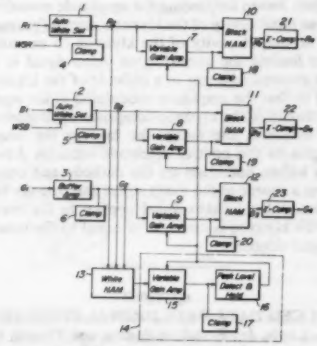
Mitsuo Mino, Tokyo, Japan, assignor to Japan Broadcasting Corp., Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,603

Claims priority, application Japan, Dec. 27, 1980, 55-187568[U]

Int. Cl.³ H04N *5/20*

U.S. Cl. 358—174 **11 Claims**



1. An automatic gain control apparatus comprising:

means for providing an input image signal from each of a plurality of separate color channels;

a plurality of variable gain amplifiers, each coupled to receive an input image signal from one of said color channels and provide an output;

a plurality of low-level selecting means coupled to receive an input image signal from one of said color channels and the output of the variable gain amplifier receiving an input image signal from the same color channel and for providing an output image signal which is the lower level one of the received input image signal and the corresponding variable gain amplifier output signal for that color channel;

high-level selecting means coupled to receive said plurality of input image signals and responsive to the said input image signals for providing an input image signal output having a level equal to the maximum one of said input image signals; and

gain control means responsive to said input image signal output from said high-level selecting means for controlling the gains of said variable gain amplifiers to vary a knee slope of the amplitude transfer characteristic of each of said low-level selecting means in said separate color channels when the peak level of at least one of said input image signals exceeds a white clip level, in such a manner that the knee slope prevents the output image signals from exceeding the white clip level.

4,470,068

TELEVISION TRANSMITTER

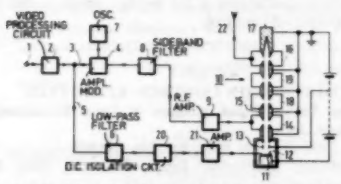
Edward G. Plume, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,758

Claims priority, application United Kingdom, Apr. 15, 1981, 8111894

Int. Cl.³ H03C *1/28*; H04B *1/04*

U.S. Cl. 358—186 **12 Claims**



1. A television signal transmitter for transmitting amplitude modulated video signals, the transmitter comprising a klystron amplifier, means for amplitude modulating an unmodulated video signal, means for feeding the amplitude modulated video signal to an input cavity of the klystron, means for coupling the signal in an output cavity of the klystron to an antenna, and means for feeding the unmodulated video signal to a control electrode situated adjacent to a cathode of the klystron, characterized in that the amplitude modulated video signal fed to the input cavity of the klystron comprises a full sideband and a vestigial sideband, the means for feeding the unmodulated video signal to the control electrode includes d.c. isolating means to isolate potentials on the cathode and control electrode from a source of the video signal and that the bandwidth of the unmodulated video signal applied to the control electrode of the klystron is less than or equal to the bandwidth of the vestigial sideband.

4,470,069

REDUCED DATA RATE DIGITAL COMB FILTER

Henry G. Lewis, Jr., Hamilton Square, and Thomas V. Bolger, Camden, both of N.J., assignors to RCA Corporation, New York, N.Y.

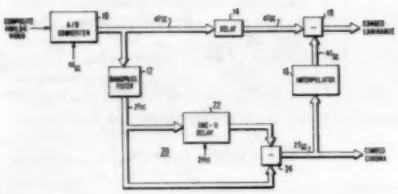
Filed Aug. 4, 1982, Ser. No. 405,031

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—31 **12 Claims**

1. In a television signal processing system, including a source of sampled data video signals at a given data rate having first and second interleaved signal components in a passband which are to be separated, a comb filter system comprising:

means, having an input coupled to said signal source, and an output, for passing said sampled data video signals at a reduced data rate which is less than said given data rate over a portion of said passband; and



a comb filter, having an input coupled to the output of said reduced data rate signal passing means, and operated at said reduced data rate for producing a comb filtered output signal.

4,470,070

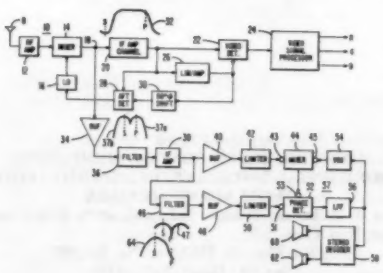
FREQUENCY TRANSLATION PHASE-LOCKED LOOP TELEVISION SOUND DETECTION SYSTEM

Patrick D. Griffis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,898

Int. Cl.³ H04N *5/62*

U.S. Cl. 358—198 **8 Claims**



1. In a television receiver including a source of intermediate frequency (IF) signal including picture and sound carriers modulated with video and audio information, respectively, apparatus for detecting said audio information comprising:

a first filter having an input coupled to receive said IF signal and having a double-humped amplitude versus frequency response characteristic with peak amplitude portions centered at the frequency of said picture and sound carriers, respectively, for providing at its output said picture and sound carriers;

an amplifier having an input coupled to the output of said first filter for amplifying said picture and sound carriers and providing said amplified carriers at the output of said amplifier;

a controllable oscillator responsive to a control signal coupled to a control input and having an output at which is provided a controlled frequency output signal;

mixer means having a first input coupled to be responsive to said amplified picture carrier, a second input coupled to be responsive to said oscillator output signal and an output for providing a frequency translated signal;

a phase detector having a first input coupled to be responsive to said amplified sound carrier, a second input coupled to

be responsive to said frequency translated signal and an output;

lowpass filter means having an input coupled to the output of said phase detector and having an output for providing said control signal to the control input of said controllable oscillator and for providing said audio information; and

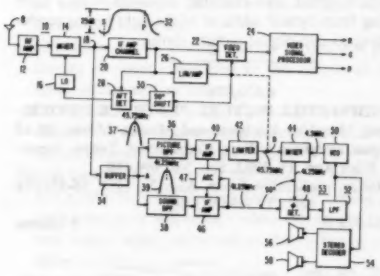
a second filter coupled to one of said first and second inputs of said phase detector, said second filter having an amplitude versus frequency response characteristic for providing a predetermined attenuation at the frequency of said picture carrier and substantially less than said predetermined attenuation at the frequency of said sound carrier.

4,470,071

TELEVISION SOUND DETECTION SYSTEM USING A FREQUENCY TRANSLATION PHASE-LOCKED LOOP

Abraham E. Rindal, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,902
Int. Cl.³ H04N 5/62
U.S. Cl. 358—198 8 Claims



1. In a television system including a source of an intermediate frequency (IF) signal including picture and sound carriers modulated with video and audio information, respectively, apparatus for detecting the audio information comprising:

a controllable oscillator responsive to a control signal coupled to a control input and having an output at which is provided a controlled frequency output signal;

means having first and second inputs and an output for providing a frequency translated signal, said first input coupled to be responsive to said picture carrier and said second input coupled to be responsive to said oscillator output signal;

a phase detector having first and second inputs and an output, said first input coupled to be responsive to said sound carrier and said second input coupled to be responsive to said frequency translated signal; and

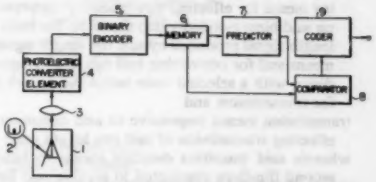
low pass filter means having an input coupled to the output of said phase detector and having an output for providing said control signal to the control input of said controllable oscillator and for providing said audio information.

4,470,072

METHOD OF BAND COMPRESSION

Akiyoshi Tanaka, Kawasaki; Kunio Sannomiya, Machida; Hiroaki Kotera; Kunio Yoshida, both of Kawasaki; Yoshihiro Uno, Machida, and Hiroaki Miwa, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Osaka and Matsushita Graphic Communications Systems, Inc., Tokyo, both of, Japan

Continuation of Ser. No. 196,335, Oct. 14, 1980,. This application Sep. 9, 1982, Ser. No. 416,175
Claims priority, application Japan, Oct. 17, 1979, 54-134595
Int. Cl.³ H04N 7/12
U.S. Cl. 358—260 1 Claim



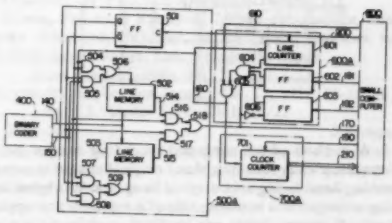
1. A band compression method depending upon an adaptive prediction system in which a constant number of picture elements are selected in the neighborhood of a picture element to be predicted to determine the predicted value of said predicted picture element, said band compression method comprising selecting reference picture elements for the determination, which include at least those picture elements which are adjacent to said predicted picture element and other picture elements including picture elements of a third order or higher, said selected third or higher order picture elements being only those which have no shaded relation with said predicted picture element and which are contiguous to each other and connected to said predicted picture element through selected reference picture elements.

4,470,073

FACSIMILE TRANSMITTER

Kozo Nakamura, and Yasuyuki Kozima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 72,914, Sep. 6, 1979,. This application Sep. 30, 1982, Ser. No. 428,978
Claims priority, application Japan, Sep. 7, 1978, 53-109093
Int. Cl.³ H04N 7/12
U.S. Cl. 358—261 7 Claims



1. In a facsimile transmitter including video signal generator means for converting the bright and dark levels detected in point to point scanning of successive lines of a document to an analog video signal with scanning of the document in response to a scan command signal, binary-coding means for converting the analog video signal to a binary-coded video signal, a motor for feeding the document, motor driving means for driving said motor in response to said scan command signal, and means for supplying said scan command signal to said video signal gener-

ator and said motor driving means, an improvement which comprises:

buffer memory means for storing said binary-coded video signal obtained from said binary-coding means;

transition detector means for applying a read clock signal to said buffer memory means to read out said binary-coded video signal stored therein and for stopping the application of said read clock signal in response to detection of a change of said video signal from white to black or black to white levels;

run length signal generator means responsive to said transition detector means for counting the pulses of a clock signal produced until the level of said binary-coded video signal changes thereby to generate a run length signal;

computer means responsive to said run length signal generator means for effecting a redundancy suppressing process on said binary-coded video signal on the basis of said run length signal produced by said run length signal generator means and for converting said run length signal in accordance with a selected code into a run length code signal for transmission; and

transmission means responsive to said computer means for effecting transmission of said run length code signal;

wherein said transition detector means includes first and second flip-flops connected to receive said binary coded video signal directly and through an inverter, respectively, as clock signals for controlling the states thereof, said flip-flops being connected to said computer means so as to be initially set to produce outputs at a first level, and gate means responsive to the outputs of said first and second flip-flops for passing clock signals to said run length signal generator means when both outputs of said flip-flops are at said first level.

4,470,074

METHOD OF SCANNING AND RECORDING IMAGES

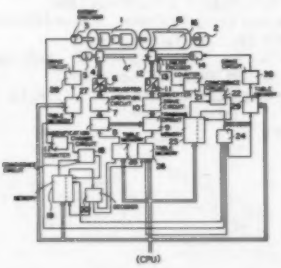
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed May 21, 1982, Ser. No. 380,690

Claims priority, application Japan, May 27, 1981, 56-81564

Int. Cl.³ H04N *1/38, 1/40*

U.S. Cl. 358—287 **5 Claims**



1. A method of scanning and recording images including photo-electrically scanning plural original images in order by a scanning head facing said original images, said original images being arranged in a scanning side of a reproduction apparatus, by which image signals are obtained; and recording reproduced images corresponding to said original images onto a film which is held in a recording side of the apparatus, said method comprising:

reading out data in order from memory means depending on positional informations of reproduced images to be recorded, said data being previously written in said means based on arrangement, forms and magnification of the reproduced images and reproduction conditions; and

controlling a device or devices incorporated in the apparatus, based on the read-out data, whereby reproduced images are recorded in desired arrangement, forms and magnification and in desired reproduction conditions.

4,470,075

METHOD AND APPARATUS FOR RECORDING A REPRODUCTION PICTURE HAVING A SUBSTANTIALLY CONTINUOUS TONE IN A PICTURE SCANNING AND RECORDING SYSTEM

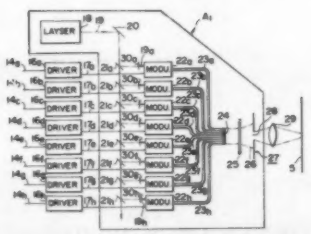
Takeshi Yoshimoto, and Masanari Tsuda, both of Kyoto, Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jul. 8, 1982, Ser. No. 396,470

Claims priority, application Japan, Jul. 24, 1981, 56-115111

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—302 **6 Claims**



1. In a picture scanning and recording system wherein a reproduction picture is recorded by modulating a plurality of light beams each independently according to a picture signal by means of light modulator elements, a method for recording a reproduction picture having a substantially continuous tone by weighting each light beam in order of digit position of a digitized picture signal, and effecting exposure with a light beam resulting from optical addition of the light beams modulated according to said digital picture signal.

4,470,076

COLOR VIDEO STILL PICTURE PLAYBACK DEVICE

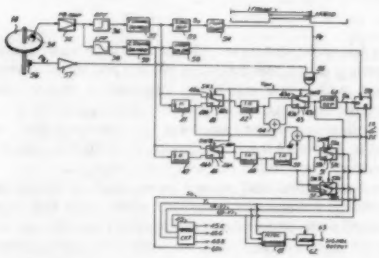
Masaaki Arai; Masahiro Kanbara, and Minoru Morio, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 19, 1982, Ser. No. 409,410

Claims priority, application Japan, Aug. 21, 1981, 56-131912

Int. Cl.³ H04N *5/93*

U.S. Cl. 358—312 **5 Claims**



1. Apparatus for reproducing a color still picture from a recorded composite color video signal stored on a video record medium with the recorded video signal being formatted as one field of video containing a succession of lines of a predetermined line period separated by horizontal synchronzing signals, and a vertical synchronizing signal, the composite color video signal containing a luminance component signal, and first and second color difference signals in alternating line

sequence, and with the reproduced color still picture being formatted as alternating first and second fields each having a plurality of lines such that the lines of the second field are interpolated between and interlaced with successive lines of the first field; comprising

playback means for reproducing the luminance component signal and the first and second color difference signals as a line sequential signal for said one field;

first switch means coupled to said playback means having two inputs, a switched output, and a control terminal, with the luminance component signal being applied directly to one of said inputs;

a first delay circuit having a delay of one-half line period with an input and an output coupled to said playback means and the other of the inputs of said first switch means, respectively;

a second delay circuit having a delay of one line period with an input coupled to the switched output of the first switch means and an output;

second switch means having two inputs, a switched output, and a control terminal, with one of said inputs connected to the output of the second delay circuit;

a first adder circuit having inputs coupled to the output of the first and second delay circuits and an output connected to the other input of said second switch means;

third switch means having two inputs, a switched output, and a control terminal, with the color difference signals being applied directly to one of said inputs;

a third delay circuit having a delay of one-half line period with an input and an output coupled to the playback means and the other input of said third switch means, respectively;

a fourth delay circuit having a delay of one line period with an input connected to the output of said third switch means and an output;

a fifth delay circuit having a delay of one line period and having an input connected to the output of the fourth delay circuit and an output;

a second adder circuit having inputs connected to the output of the third switch means and the output of the fifth delay circuit, respectively, and an output;

fourth switch means having two inputs, a switched output, and a control terminal, one of said inputs being connected to the output of said second adder circuit and the other of said inputs being connected to the output of said fourth delay circuit;

fifth switch means having two inputs, a switched output, and a control terminal, one of said inputs being connected to the output of said fourth delay circuit and the other of said inputs being connected to the output of said second adder circuit;

means supplying a first switching signal to the control terminals of said first, second, and third switch means to connect the outputs thereof to the one associated inputs during said first fields, and to the other associated inputs during said second fields;

means supplying a second switching signal to the control terminals of said fourth and fifth switch means to connect the outputs thereof to the one associated inputs during alternating lines periods and to the other associated inputs during the remaining line periods; and

output signal processing means having inputs connected to the outputs of said second, fourth, and fifth switch means and an output providing the reproduced color video signal.

4,470,077

VIDEO SYSTEM

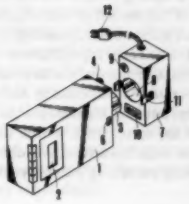
Yoshio Komine, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1982, Ser. No. 364,890

Claims priority, application Japan, Apr. 17, 1981, 56-58168

Int. Cl.³ H04N *5/76, 5/26*

U.S. Cl. 358—335 **9 Claims**



1. A video system comprising:

(a) a video camera including:

image pick up means for picking up an object image and producing image signals;

an optical lens system for focusing said object image onto said image pick up means;

recording means for recording said image signals on a recording medium; and

camera casing means for enclosing said image pick up means and said recording means;

(b) a reproducing apparatus including:

converting means for converting the signals recorded on said medium to video signals which can be displayed by the television set; and

second casing means for accommodating said converting means;

(c) coupling means for mechanically coupling said camera casing means and said second casing means;

(d) transmitting means for transmitting said image signals to said converting means; and

(e) covering means arranged to cover said optical lens in response to a coupling operation of said camera casing means with said second casing means by said coupling means.

4,470,078

PULSE DRIVEN CONTROL CIRCUIT FOR MOVING A TRANSDUCER ACROSS A ROTARY RECORDING MEDIUM OF PULSES APPLIED THERETO

Atsumi Hirata, Fujisawa; Katsuyuki Mitsui, Sagamihara, and Yasutaka Koumatsu, Fujisawa, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 23, 1981, Ser. No. 246,721

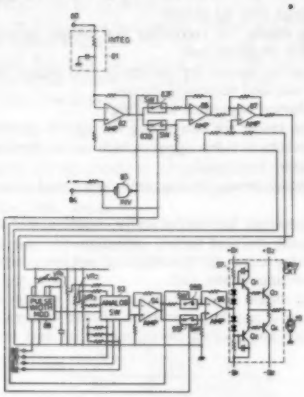
Claims priority, application Japan, Mar. 22, 1980, 55-36558

Int. Cl.³ H04N *5/76;* **G11B** *21/12*

U.S. Cl. 358—342 **5 Claims**

1. A control circuit for a reproducing transducer feeding motor for use in an apparatus for reproducing a video signal from a rotary recording medium on which the video signal is recorded along a spiral track, each track turn of the spiral track containing a plurality of fields of the video signal, first and second reference signals being recorded respectively on opposite sides of the track in a manner such that the first and second reference signals alternate with each other for every track turn, a third reference signal being recorded together with the video signal and being inserted in vertical blanking periods which are recorded at a position on each track turn corresponding to the location where said reference signals switch from one side to the other side, said reproducing transducer comprising reproducing element means for tracing over the spiral track on the rotary recording medium while picking up

the video signal and the first, second, and third reference signals, said apparatus comprising separating means for individually separating the first, second, and third reference signals from the output signal of said reproducing element means, pulse generating means for generating a pulse signal in response to the separated third reference signal during normal-picture-motion-reproduction, kick pulse generating means responsive to a mode selection by a control part for generating kick pulses with a timing which corresponds to the vertical blanking periods of the recorded video signal, a predetermined number of the kick pulses corresponding to the selected mode for carrying out a special reproduction of picture motion which differs from the normal-picture-motion-reproduction, shifting means operated in response to each of the kick pulses for causing the reproducing element means to shift to an adjacent track turn of the spiral track within the vertical blanking period recorded on each track turn, switching pulse generating means for generating switching pulses synchronized with each



of the kick pulses, except for the timing of the separation of the third reference signal from the output signal of said reproducing element means, and a motor driving means for moving said reproducing transducer along a radial direction across said rotary recording medium, said control circuit comprising:

feed pulse forming means for forming a number of feed pulses proportional to (n+2m) pulses, where n is an integer which is greater than or equal to zero, representing the number of switching pulses generated by said switching pulse generating means in response to the reproduction of the third reference signal, and m is an integer greater than or equal to zero representing the number of kick pulses required for shifting the reproducing element means from one track turn to another track turn toward a center of the rotary recording medium at said position where said third reference signal is recorded; and

controlling means for controlling the rotation of said feeding motor responsive to said feed pulses obtained from said feed pulse forming means.

4,470,079

TRACKING CONTROL SYSTEM IN A MAGNETIC RECORDING AND REPRODUCING APPARATUS

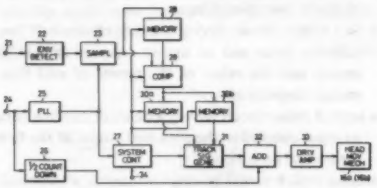
Masahiko Tsuruta, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan

Filed Feb. 10, 1982, Ser. No. 347,395

Claims priority, application Japan, Feb. 13, 1981, 56-19689; Feb. 27, 1981, 56-27838; Feb. 27, 1981, 56-27839; Feb. 27, 1981, 56-27840; Feb. 27, 1981, 56-27841; Feb. 27, 1981, 56-27842; Feb. 27, 1981, 56-27001[U]

Int. Cl.³ H04N *5/783;* G11B *21/10*

U.S. Cl. 360—10.2 10 Claims



1. A tracking control system in a magnetic recording and reproducing apparatus having one or a plurality of rotary heads for reproducing a signal by successively scanning oblique tracks on a magnetic tape, said tracking control system comprising:

head moving means for moving at least one rotary head along a direction of its height;

head moving signal applying means for generating a head moving signal in the form of a square wave which rises and falls for every 2nT (n is an integer, and T is a period in which one rotary head scans one track) period, when the rotary head scans the track with the same scanning pattern in units of 2nT period, to apply this head moving signal to said head moving means; and

tracking control means for comparing a level of a reproduced signal at a position separated by a predetermined distance from an end part of the reproduced signal track by scanning the track in a state where the rotary head is moved to one side by said head moving means, and a level of a reproduced signal at a position separated by said predetermined distance from an end part of the reproduced signal track by scanning the track in a state where the rotary head is moved to the other side by said head moving means, to detect the tracking error, and obtaining a control signal from a detected output to apply the control signal to said head moving means.

4,470,080

CIRCUIT FOR DETECTING FREQUENCY MODULATED SIGNAL

Kenji Kimura, Tachikiawa, Japan, assignor to Olympus Optical Co. Ltd., Japan

Filed May 5, 1982, Ser. No. 375,306

Claims priority, application Japan, May 14, 1981, 56-71342

Int. Cl.³ G11B *5/04, 5/02*

U.S. Cl. 360—30 10 Claims

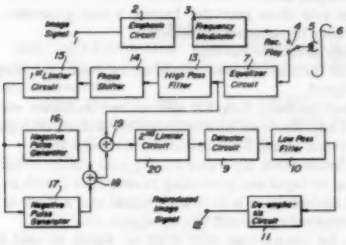
1. A circuit for detecting a frequency modulated signal for use in a picture recording and reproducing apparatus including a circuit for frequency modulating a carrier with an image signal to produce a frequency modulated wave and a converting element for recording the frequency modulated wave on a record medium and for picking-up the recorded frequency modulated wave from the record medium to produce a reproduced frequency modulated wave, comprising

first limiter means for detecting a fundamental wave in the reproduced freqeuncy modulated wave to produce a first rectangular wave;

pulse generating means for producing, in response to the first

rectangular wave, pulses having a constant pulse width which is shorter than a period of the maximum frequency of the reproduced frequency modulated wave;

mixing means for superimposing the pulses of the constant pulse width upon the reproduced frequency modulated wave to produce a pulse superimposed frequency modulated wave;



second limiter means for converting the pulse superimposed frequency modulated wave into a second rectangular wave; and

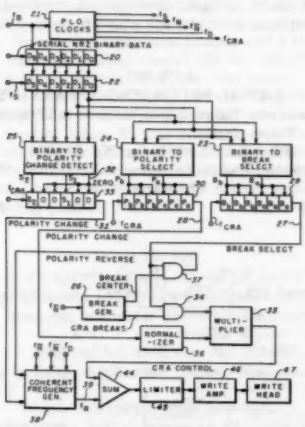
detecting means for demodulating the second rectangular wave to reproduce the image signal.

4,470,081

CONTROLLED RETURN TO A.C. DIGITAL MAGNETIC AND REPRODUCING SYSTEM

Chao S. Chi, Shrewsbury, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,352
Int. Cl.³ G11B 5/09, 5/47
U.S. Cl. 360—43 **11 Claims**



1. A magnetic recording and reproducing system for recording information on a magnetic medium and recovering said information therefrom, comprising

means for generating an alternating signal of alternating reversals that erases the medium,

means for interrupting said alternating signal at a controlled first polarity thereof,

means for continuing the generation of said alternating signal after said interruption at a polarity of said alternating signal opposite said first polarity,

means for recording the interrupted alternating signal on said medium,

said interruption comprising a break of said polarity embedded in said alternating signal,

said means for generating an alternating signal including means for controlling the phase of said alternating signal in accordance with the polarities of said breaks,

means for receiving input binary digits,

mapping means responsive to groups of a predetermined number of said binary digits for controlling the generation of a predetermined number of said breaks, each break being present or absent and being of a polarity in accordance with said groups of binary digits,

a system write clock in which said mapping means includes break generator means for generating said breaks in synchronism with said system write clock, and

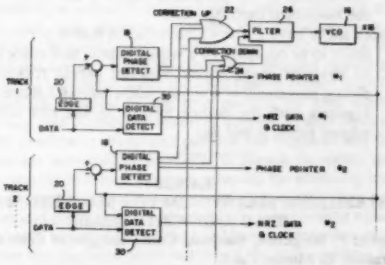
a break select signal generator included in said mapping means responsive to said groups of binary input digits for generating a break select signal for gating said breaks from said break generator means in accordance with said groups of binary input digits.

4,470,082

DIGITAL CLOCKING AND DETECTION SYSTEM FOR A DIGITAL STORAGE SYSTEM

Richard W. Van Pelt, Boulder, and Donald F. McCarthy, Jefferson County, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jul. 6, 1982, Ser. No. 395,605
Int. Cl.³ G11B 5/09; H03L 7/10
U.S. Cl. 360—51 **15 Claims**



1. A data clocking and detection system for a digital data storage system in which digital data represented by transitions within successive bit cells are stored and played back in multiple tracks comprising:

a phase detector for each of said multiple tracks, each phase detector producing a correction output representing the phase error of the transitions in the associated track with respect to clock pulses which define said bit cells;

a data detector for each of said multiple tracks, each data detector being responsive to the played back transitions and to said clock pulses to produce signals representing said digital data;

a common controlled oscillator for said multiple tracks producing clock pulses applied to the phase detector and data detector for each of said multiple tracks; and

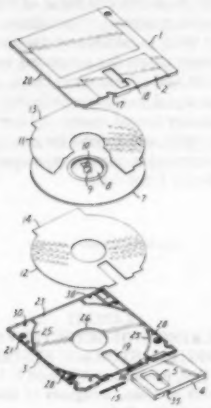
means for combining the correction outputs of said phase detectors to produce a control signal applied to said controlled oscillator to change the frequency of said clock pulses in accordance with the phase error of the transitions in said multiple tracks with respect to said bit cells.

4,470,083

MAGNETIC RECORDING DISK CARTRIDGE

Arlin B. Doering, South St. Paul, and Terrance D. Lindberg, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 30, 1983, Ser. No. 556,607
Int. Cl.³ G11B 5/012, 5/10, 5/12, 5/41
U.S. Cl. 360—97 8 Claims



1. A magnetic recording disk cartridge having a central opening for receiving a drive shaft of a recording or reproducing apparatus and at least one opening for receiving a magnetic recording head, said cartridge comprising a pair of shells:

at least one of which has peripheral raised edges in facing relationship to the peripheral edges of the other shell in the assembled cartridge; and

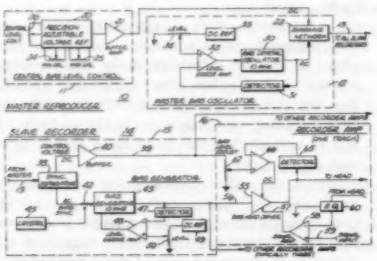
both shells having ribs which define at least a portion of the space to be occupied by a wiping fabric, said space having an irregular shape which does not permit rotational or sliding movement of a wiping fabric having a shape which registers with the outline formed by the ribs when the wiping fabric is laid flat.

4,470,084

STABILIZED BIAS SYSTEM FOR MAGNETIC TAPE READ AND WRITE HEADS

Barrett P. Biagaman, Burbank, Calif., assignor to Cetec Corporation, El Monte, Calif.

Filed Jul. 28, 1982, Ser. No. 402,771
Int. Cl.³ G11B 5/86, 5/47
U.S. Cl. 360—15 9 Claims



1. In a bias system for a plurality of high speed tape recorders, the combination of:

a master reproducer having

a first adjustable dc source providing a first dc signal,

a first oscillator means providing a first high frequency ac signal,

a first feedback loop for said first oscillator means,

a second adjustable dc source providing a second dc signal as a reference signal for said first feedback loop, and

a summing network having said first dc signal and said first ac signal as inputs and providing a master control signal as an output; and

at least one slave recorder having a bias generator and a plurality of recorder amplifiers,

said bias generator having

a second oscillator means providing a second high frequency ac signal,

a second feedback loop for said second oscillator means,

a third adjustable dc source providing a third dc signal as a reference signal for said second feedback loop,

a synchronization separator having said master control signal as an input and providing as outputs a fourth dc signal corresponding to said first dc signal and a third ac signal corresponding to said first ac signal, and

means for connecting said third ac signal to said second oscillator means for synchronizing said second ac signal with said first ac signal; and

each of said recorder amplifiers having

a driver amplifier having two ac inputs and an amplitude control input, and providing a fourth ac signal as an output to a record head, with said second ac signal connected as one of said ac inputs,

a third feedback loop for said driver amplifier,

a fourth adjustable dc source providing a fifth dc signal as a reference signal for said third feedback loop, with said fourth dc signal connected as the input to said fourth dc source, and

a signal amplifier having an externally generated audio frequency ac signal as one input and the return from the record head as another input, and providing as an output a sixth ac signal connected as the other ac input to said driver amplifier,

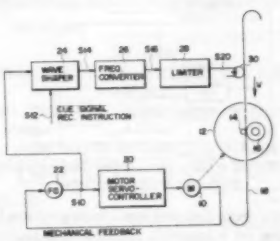
with said fourth ac signal comprising a combination of an audio information signal and a high frequency bias signal.

4,470,085

CUE SIGNAL-RECORDING APPARATUS

Katsumi Kanayama, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1981, Ser. No. 286,028
Claims priority, application Japan, Jul. 31, 1980, 55-105568
Int. Cl.³ G11B 15/00
U.S. Cl. 360—72.1 11 Claims



1. A cue signal-recording apparatus which comprises:

a motor for driving a recording medium at a given running speed relative to a recording head;

first means coupled to the motor for providing a first signal having a frequency which corresponds to the running speed of the recording medium; and

second means coupled to the first means and to said recording head for producing a cue signal from said first signal so

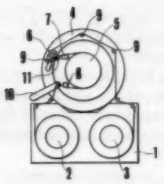
that said cue signal is time-synchronized with said first signal, and for recording said cue signal on the recording medium such that the wavelength of said cue signal recorded on said recording medium is substantially constant regardless of the running speed of the recording medium during recording of said cue signal, said cue signal indicating the position of particular data recorded on the recording medium.

4,470,086

RECORD REPRODUCTION APPARATUS

Masaya Maeda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1981, Ser. No. 332,207
Claims priority, application Japan, Dec. 24, 1980, 55-184860
Int. Cl.³ G11B *5/08, 15/60, 15/18*
U.S. Cl. 360—85 **9 Claims**



1. An apparatus for recording signals on and/or reproducing recorded signals from a belt-shaped recording medium, comprising:

(a) recording and/or reproducing means for recording signals on and/or reproducing recorded signals from said recording medium;

(b) loading means for loading said recording medium on said recording and/or reproducing means, said loading means being movable between an unloading position where the loading means unloads the recording medium from the recording and/or reproducing means and a loading position where the loading means loads the recording medium on the recording and/or reproducing means;

(c) take-up means for taking up said recording medium; and

(d) transmission means for transmitting the movement of said loading means to said take-up means to cause the take-up means to take up said recording medium in association with the movement of the loading means when the loading means moves from said loading position to said unloading position.

4,470,087

HEAD BASE DRIVE MECHANISM IN TAPE PLAYER

Masayoshi Sakamoto, and Minoru Kamata, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 15, 1981, Ser. No. 302,630
Claims priority, application Japan, Sep. 19, 1980, 55-133508[U]
Int. Cl.³ G11B *5/54*
U.S. Cl. 360—105 **6 Claims**

1. A head base drive mechanism in a tape player comprising

a chassis;

a head base carrying a head thereon and slidably disposed on said chassis between a playback position and a stop position;

a tension spring connecting the chassis and the head base to normally urge the head base toward said stop position;

a rotating capstan journalled in the chassis and having a pinion concentrically connected thereto;

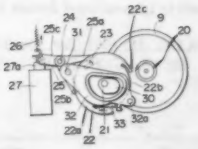
pinch roller means provided opposite said rotating capstan and in contact engagement with said head base;

a sector gear rotatably mounted to the chassis and having a toothed section and an untoothed section, said toothed section being adapted to be in meshing engagement with said pinion;

a cam plate attached to said sector gear;

an actuating lever for actuating said head base pivotally mounted to the chassis, said actuating lever being in contact with said cam plate and being biased in a predetermined direction;

means for alternately locking said sector gear, said means being adapted to take a first position for locking the sector gear at a first lock position where said pinion is opposite a first end of the untoothed section and to take a second position for locking the sector gear at a second lock position where said pinion is opposite a second end of the untoothed section, said cam plate being adapted to drive the actuating lever to actuate the head base toward the playback position against the bias of said tension spring when the sector gear takes said second lock position while pressing said pinch roller means against the rotating capstan and to release the head base from said playback position when the sector gear takes said first lock position said biasing of the actuating lever acting on the cam plate to



bring the pinion into engagement with the toothed section of said sector gear upon release of the locked sector gear from the first lock position and to allow the sector gear which has gone out of engagement with the pinion to rotate upon release from the second lock position to take the first lock position, whereby the actuating lever is allowed to rotate in said predetermined direction such that said pinch roller is released from said pressing against the rotating capstan to allow the head base to retract from the playback position to the stop position by said tension spring, said locking means being adapted to shift from the first position to the second position but return to said first position immediately thereafter to permit the sector gear to take the first lock position, whereby the actuating lever is allowed to rotate in said predetermined direction such that said pinch roller is released from said pressing against the rotating capstan and the head base is released to move from the playback position toward the stop position; and

stop means for stopping, during said movement from the playback position to said stop position the head base at a cue position where said head base is slightly retracted from the playback position while maintaining tape contact of the head.

4,470,088

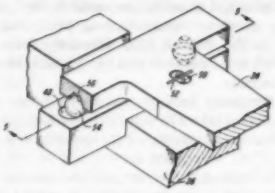
PIVOT SUSPENSION FOR HEAD ARM ON DISK DRIVE

Adolf L. Fick, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 8, 1982, Ser. No. 338,445
Int. Cl.³ G11B *5/54, 21/22*
U.S. Cl. 360—105 **9 Claims**

1. A pivot arrangement for mounting a magnetic transducer in overlying relationship to a planar magnetic recording medium for arcuate movement toward and away from the plane of the medium comprising support means, a movable transducer support arm carrying said magnetic transducer at one end, pivot means located between said support means and the other end of said support arm, about which said movable support arm is mounted for movement, said pivot means in-

cluding a pair of spherical bearing surfaces, and a mating pair of positioning bearing recesses located in at least one of said support means and said other end of said movable support arm



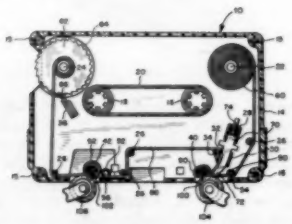
for receiving said pair of spherical bearing surfaces, at least one of said bearing recesses being partially conical, and biasing means for urging said support arm toward the plane of the medium.

4,470,089

TAPE UNIT CLEANING DEVICE

Bruce A. Hutchins, Rocheport, and Richard Fay, Columbia, both of Mo., assignors to International Jensen Incorporated, Schiller Park, Ill.

Filed Dec. 21, 1981, Ser. No. 332,822
Int. Cl.³ G11B *23/50, 5/41*
U.S. Cl. 360—137 **31 Claims**



1. A cleaning device for a magnetic tape unit comprising at least one rotatable element, said device comprising:

a housing;

a supply reel mounted to the housing;

a support surface included in the housing;

a cleaning tape wound on the supply reel and extending between the supply reel and the support surface, such that the tape can be advanced from the supply reel to the support surface;

means for holding the cleaning tape stationary during rotation of said at least one rotatable element of the tape unit to be cleaned;

means for bringing an intermediate portion of the tape into contact with the at least one rotatable element of the tape unit such that rotary motion of the rotatable element cleans the rotatable element against the stationary tape, said intermediate portion situated between the supply reel and the support surface; and

means for advancing the tape to bring a fresh portion of the tape into contact with the rotatable element.

4,470,090

SUPERCONDUCTING INDUCTION APPARATUS

Walter J. Carr, Jr., Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

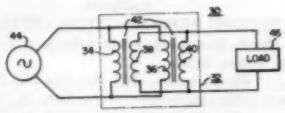
Filed May 7, 1979, Ser. No. 36,950
Int. Cl.³ H02H *9/02*
U.S. Cl. 361—19 **8 Claims**

1. Electrical induction apparatus comprising:

at least one pair of superconducting windings, including a main winding having a plurality of turns of superconducting wire, and an auxiliary winding having a plurality of turns of superconducting wire, said superconducting wire having a portion thereof formed of superconducting materials,

said auxiliary winding being connected in parallel with said main winding,

said auxiliary winding being disposed adjacent to and concentric with the outside periphery of said main winding in the relatively field-free region that exists when said main winding is energized,



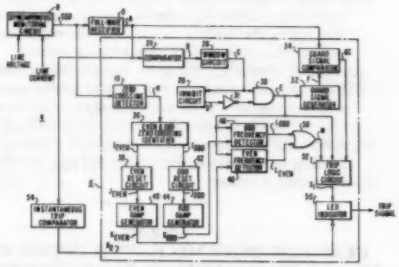
said main winding being sized to carry the normal operating current of the apparatus and said auxiliary winding being sized to carry predetermined fault and overload currents in said superconducting material portion of said superconducting wire.

4,470,091

PRODUCTIVE RELAY APPARATUS FOR PROTECTION FROM SUB-SYNCHRONOUS CURRENT OSCILLATIONS IN A POWER SYSTEM

Shan C. Sun, Coral Springs, Fla., and Robert J. DelCoco, Severn, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 20, 1982, Ser. No. 435,441
Int. Cl.³ H02H *3/26, 7/06*
U.S. Cl. 361—20 **18 Claims**



1. A protective relay for protecting a power system from sub-synchronous current oscillations, said protective relay comprising:

first circuit means being adapted for coupling to the power system for producing a sub-synchronous signal representative of the sub-synchronous current therein;

means for producing a reference signal;

second circuit means for determining the amplitude of said sub-synchronous signal and for producing a guard-crossing pulse when said sub-synchronous signal exceeds said reference signal;

third circuit means for determining the frequency of said sub-synchronous signal and for producing a correct frequency pulse when the frequency of said sub-synchronous signal is within a predetermined frequency range;

fourth circuit means responsive to said guard-crossing pulse

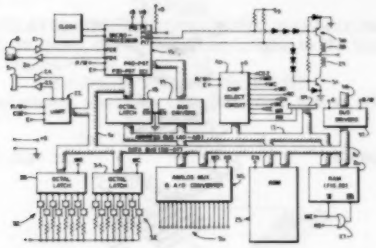
and said correct frequency pulse for producing a first trip signal when a predetermined logic relationship exists between said guard-crossing pulse and said correct frequency pulse.

4,470,092

PROGRAMMABLE MOTOR PROTECTOR

Steven A. Lombardi, Greendale, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 27, 1982, Ser. No. 423,793
Int. Cl.³ H02H *5/04, 7/08;* G01R *19/00, 21/00*
U.S. Cl. 361—23 6 Claims



1. A programmable motor protector, the combination comprising:

means for storing an input image table;

means coupled to the motor for periodically reading the values of motor operating parameters and storing the values in the input image table storage means;

means for storing a diagnostic table;

means for storing a user entry table;

programmer means for entering values into the user entry table storage means which are indicative of trip levels for motor operating parameters;

trip means for indicating a trip condition when enabled;

comparator means coupled to the trip means and being operable to periodically compare values in the input image table storage means with corresponding trip level values in the user entry table storage means, and being operable to enble the trip means when a trip level is exceeded; and

transfer means coupled to the trip means for transferring values in the input image table storage means to the diagnostic table storage means when the trip means is enabled.

4,470,093

PROTECTIVE RELAY SYSTEM AND SAMPLING SYNCHRONIZING METHOD THEREFOR

Mitsuru Yamaura, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 21, 1982, Ser. No. 435,547
Claims priority, application Japan, Oct. 29, 1981, 56-173643
Int. Cl.³ H02H *7/26*
U.S. Cl. 361—68 10 Claims

6. A protective relay system for an electric power system having a relay device provided at each terminal of at least one pair of terminals for sampling an electrical quantity in synchronism with a clock signal produced at each terminal of said at least one pair and for producing electrical quantity data indicating said sampled electrical quantity, and a data exchange device provided at each terminal of said at least one pair of terminals for transmitting said electrical quantity data toward an opposite terminal of said at least one pair and for receiving said electrical quantity data transmitted from said opposite terminal of said at least one pair, a said relay device at each terminal of said at least one pair being responsive to said electrical quantity data transmitted from said opposite terminal for protecting said electric power system, said clock signals produced at each terminal of said at least one pair having the same frequency,

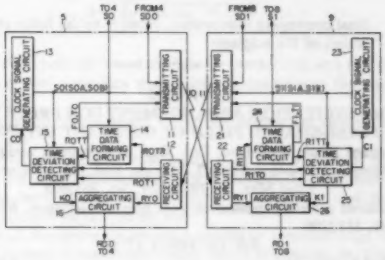
said data exchange device at each terminal comprising:

a clock signal generating circuit periodically generating a said clock signal,

a transmitting circuit for transmitting a synchronous signal upon an N-th occurence of a fixed time relation with a said clock signal at each terminal of said at least one pair subsequent to receipt of a synchronous signal from said opposite terminal, said fixed time relation being common at both terminals of said at least one pair, N being a natural number,

a said transmitting circuit at each terminal opposite to a said at least one terminal of said at least one pair further transmitting time data in association with a said synchronous signal, said time data indicating a relative time of receipt of a said synchronous signal from said opposite terminal with reference to occurrence of a said clock signal, and

a receiving circuit at each said at least one terminal of said at least one pair for receiving a said synchronous signal and



any associated time data transmitted from said opposite terminal,

and

said data exchange device at each said at least one terminal of said at least one pair further comprising:

a time deviation detecting means detecting in accordance with time data transmitted from said opposite terminal a time point at which a said synchronous signal from said opposite terminal is received, a time point at which an immediately preceding transmission of a said synchronous signal toward said opposite terminal took place, a said clock signal at each said at least one terminal of said at least one pair, and a time deviation of occurrence of a said clock signal at each said at least one terminal of said at least one pair with reference to occurrence of a said clock signal at said opposite terminal,

a said clock signal generating circuit at a said at least one terminal of said at least one pair being adapted to be adjusted as to a time point of occurrence of a said clock signal in accordance with a said detected time deviation.

4,470,094

DEMAGNETIZING APPARATUS AND METHOD

Joseph A. Armond, River Grove; Gabriel R. Buky, and Fred Patrick, both of Chicago, all of Ill., assignors to Electro-Matic Products Co., Chicago, Ill.

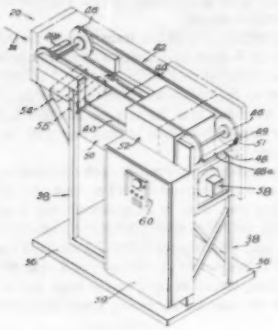
Continuation-in-part of Ser. No. 167,937, Jul. 14, 1980,. This application May 27, 1982, Ser. No. 382,678
Int. Cl.³ H01F *13/00*
U.S. Cl. 361—149 11 Claims

1. Demagnetizing apparatus comprising,

conveyor means for conveying workpieces longitudinally along a path,

demagnetizing magnets at spaced positions along the path, and arranged at 90° to each other and both at 45° to the line of conveyance, and

the apparatus having means effective for presenting the workpieces at changing attitudes, aside from the longitudinal conveying movements, relative to the fields of magnetism of the magnets.



4,470,095

COIL EXCITATION ARRANGEMENT FOR PRODUCING A PULSE-SHAPED FIELD OF CONSTANT INTENSITY

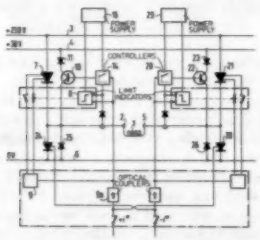
Gerhard Dönig, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 362,845

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112280

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—153 **6 Claims**



1. An excitation arrangement suitable for use in producing a pulse-shaped field of a substantially constant intensity, comprising a coil to be excited, a high-voltage current feed line, a low-voltage current feed line, a power semiconductor device which is arranged to allow the supply of excitation current to the coil from the high-voltage current line and which can be switched-on to start-up an excitation current pulse and blocked after a short starting-up time, and a power transistor which is arranged to allow the supply of excitation current to the coil from the low-voltage current line until the end of the current pulse, the power transistor being arranged to maintain the amplitude of the current pulse substantially constant, a further power semiconductor device which is arranged to allow the supply of excitation current to the coil, in a direction opposite to that of said power semiconductor device, a further power transistor which is arranged to allow the supply of excitation current to the coil from the low-voltage current line until the end of the current pulse and arranged to provide an excitation current pulse in a direction opposite to that of said power transistor, and at least first and second free-running diodes, said first free-running diode being arranged to be connected antiparallel to a selectable one of the power semiconductor device and power transistor, said second free-running diode being connected antiparallel to a selectable one of said further power semiconductor device and said further power transistor.

4,470,096

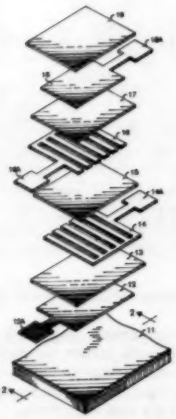
MULTILAYER, FULLY-TRIMMABLE, FILM-TYPE CAPACITOR AND METHOD OF ADJUSTMENT

Patrick W. Guertin, Sunrise, Fla., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jun. 18, 1982, Ser. No. 390,141

Int. Cl.³ H01G *5/00, 7/00*

U.S. Cl. 361—277 **10 Claims**



5. A multilayer trimmable capacitor comprising:

(a) an insulating substrate;

(b) a plurality of metallic layers on said substrate interspersed with insulating dielectric layers; the intermediate metallic layers having segmented finger-like electrodes partially exposed and intercoupled on one side, wherein the topmost metallic layer and the bottommost layer have terminals which are alternately coupled to said intermediate metallic layers;

(c) said exposed segmented finger-like electrodes being adapted for severing to alter the observed capacitance of the assembled capacitor; and

(d) a coating of passivating material covering said capacitor.

4,470,097

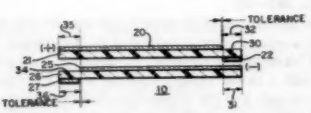
DUAL FILM METALLIZED CAPACITOR

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts, Inc., Eatontown, N.J.

Filed Jan. 21, 1983, Ser. No. 459,794

Int. Cl.³ H01G *1/015*

U.S. Cl. 361—304 **6 Claims**



1. A metallized wound capacitor comprising a pair of elongated dielectric webs each having first and second faces with a first electrode metallized on each first face each of said first electrodes being of width less than its respective dielectric web and extending from opposing dielectric web longitudinal edges leaving respective bare margins of the dielectric web along opposing edges thereof, each of said dielectric webs having a

second electrode metallized on a second face and only opposing the respective bare margin, each second electrode having a width equal to the opposing bare margin less a manufacturing tolerance so that each second electrode does not extend in an opposing relationship with the respective first electrode, and the dielectric webs being convolutely arranged in a capacitor roll with the electrodes in superposed relation to each other.

4,470,098

MULTILAYER CERAMIC DIELECTRIC CAPACITORS

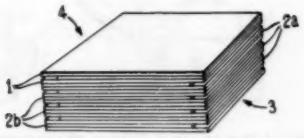
John H. Alexander, Stortford, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 17, 1983, Ser. No. 467,532

Claims priority, application United Kingdom, Feb. 18, 1982, 820477

Int. Cl.³ H01G 3/06, 4/12

U.S. Cl. 361—321 6 Claims



5. A multilayer ceramic capacitor comprising a stack of layers of ceramic material and an electrode provided between at least two adjacent layers, said electrode being of a conductive material and being arranged in a pattern of spaced parallel strips, said layers being bonded together at least at the locations devoid of said electrode.

4,470,099

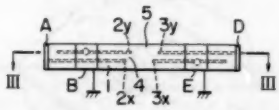
LAMINATED CAPACITOR

Hitoshi Sawairi, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 17, 1982, Ser. No. 419,205

Int. Cl.³ H01G 4/38

U.S. Cl. 361—328 5 Claims



1. A laminated capacitor comprising a plurality of capacitor units arranged in parallel, each of said capacitor units being constructed as a laminated assembly of layered dielectric materials and internal electrode layers, layered one after the other, with the number of layers of said internal electrode layers being an even number which is at least two, adjacent capacitor units being arranged such that an internal electrode layer of one of the adjacent capacitor units and an internal electrode layer of another of the adjacent capacitor units are formed on the same plane, and are connected to an earth terminal and hot terminal respectively.

4,470,100

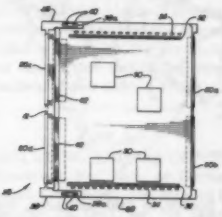
PRINTED CIRCUIT BOARD CONNECTOR FOR USE IN COMPUTER SYSTEMS

Amadeus P. Rebaudo, Belmont; Art J. Gwerder, Fremont; William C. Chow, San Jose, and Stimson F. Ho, Cupertino, all of Calif., assignors to Storage Technology Partners, Santa Clara, Calif.

Filed Dec. 21, 1981, Ser. No. 332,487

Int. Cl.³ H05K 1/14

U.S. Cl. 361—413 15 Claims



1. A printed circuit board module for connection to a pair of spaced parallel stationary panels having connectors thereon, comprising:

rigid printed circuit board means for supporting electronic circuits;

a first connector set means coupled to a first edge of the printed circuit board means, for making electrical connections between the printed circuit board means and the connectors on one panel; and

a second connector set means, coupled to a second edge of the printed circuit board means which is opposite the first edge, for making electrical connections between the printed circuit board means and the connectors on the other panel, and first and second connector set means being movable with respect to one another in the direction of the plane of the circuit board means from a retracted position which enables the module to be inserted between the panels to an extended position in which the connector set means are coupled to the connectors of the panels, wherein the second connector set means remains coupled to the edge of the printed circuit board means in both the retracted and extended positions.

4,470,101

APPARATUS FOR THE MOUNTING AND WIRING OF PRINTED CIRCUIT BOARDS

Rudolph A. Drexler, Bristol, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,277

Int. Cl.³ H05K 1/14

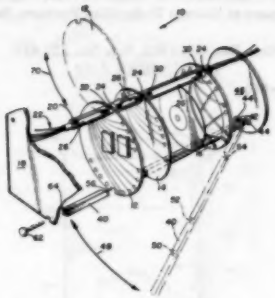
U.S. Cl. 361—415 13 Claims

1. An assembly comprising:

a plurality of electrical circuit boards each including means defining a generally circular aperture of predetermined diameter disposed near the periphery of said board and further defining a neck area having a dimension less than said diameter to permit access to said aperture; and

elongated mounting means for mounting said circuit boards in a spaced-apart coaxial relationship, said mounting means being disposed transverse to said circuit boards and including pivot means for pivotably attaching said circuit boards to said mounting means while permitting eccentric pivotal movement of each said circuit board substantially within its own plane so that predetermined boards can be moved out of and back into said coaxial relationship about a transverse axis defined by said mounting means, wherein said pivot means includes means defining plural cylindrical areas of a reduced cross-sectional dimension axially spaced apart with respect to one another to define the

separation distances between said boards, each of said board apertures accepting a respective one of said areas in press-fitting relationship by virtue of said neck area to



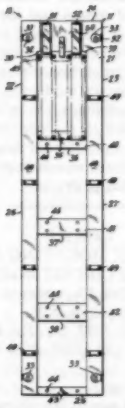
mount said boards to said mounting means while yet permitting said eccentric pivotal movement thereof about said axis.

4,470,102

WALL MOUNTED DISTRIBUTION FRAME FOR TELEPHONE SUBSCRIBER LOCATIONS

Paul V. De Luca, Plandome Manor, and Albert Atun, Valley Stream, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,588
Int. Cl.³ H04Q *1/14*
U.S. Cl. 361—428 **3 Claims**



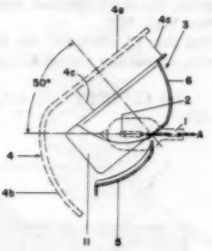
1. An improved telephone wall mounted distributing frame comprising: a base element of generally elongate configuration, including a planar base wall, a pair of side walls joining said base wall along elongated edges thereof, said side walls having means for mounting said base element upon a supporting surface, wherein said base wall, side walls, and supporting surface define a hollow trough; said base wall having through openings therein of rectangular configuration communicating with said trough, said openings being bordered by peripheral transversely extending portions of said base wall having cooperating means thereon for the mounting of standardized block mounting brackets, said opening being also bordered by longitudinally extending peripheral areas of said base wall, said last mentioned areas having jumper retaining members for the accommodation of longitudinally extending wires; a transversely extending area at at least one end of said base wall, and at least one trough-forming member supported upon said area and open at the ends thereof.

4,470,103

COMBINED DIRECT-INDIRECT LIGHTING PHOTOGRAPHIC SCENE ILLUMINATION DEVICE

Rudolf Krieg, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,344
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000594
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—17 **15 Claims**



1. Combined direct-indirect lighting photo scene illumination device having

a halogen incandescent lamp (1) with a compact lamp filament (2) and a reflector (3),

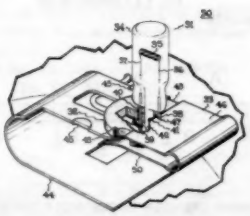
wherein the reflector (3) comprises a single reflector structure of essentially elliptical cross section and positioned symmetrically about the lamp, which structure includes two reflector portions (5, 6) which are movable with respect to each other and have a relative reflecting light flux ratio of about 1:6.

4,470,104

AUTOMOTIVE INNER-BULB ASSEMBLY

Charles W. Cox, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,113
Int. Cl.³ F21M *3/30*
U.S. Cl. 362—211 **11 Claims**



1. An automotive lamp unit having a reflector, mounting member, and inner-bulb assembly located at a predetermined reference distance within the lamp unit wherein said inner-bulb assembly comprises the elements of:

(a) an inner bulb having one or more filaments and at least two pin leads;

(b) an electrically, nonconductive flat disc providing sole support means for said inner bulb by means of a pair of apertures in which said pin leads are frictionally fitted

while extending therethrough and prevent significant disc rotation;

(c) an electrically conductive clip physically gripping both major surfaces of said disc, connected both electrically and mechanically to a first of said pin leads by means of a third aperture through which said pin lead extends, and which secures said assembly to said mounting member located within said lamp unit without significant clip rotation; and

(d) one or more external lead wires wherein each of said external lead wires is connected to a corresponding pin lead, other than to said first pin lead.

4,470,105

OPTICAL APPARATUS

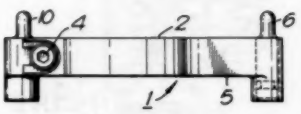
John E. Churchill, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,424

Claims priority, application United Kingdom, Jan. 18, 1982, 8201254

Int. Cl.³ F21V *21/00*

U.S. Cl. 362—396 **18 Claims**



1. An optical apparatus comprising a base member, an optical source lamp, a lamp holder, and means for urging the holder against the base member, characterised in that the holder has a three point kinematic contact with the base member and is provided with means for adjusting position of the lamp with respect to the base member to direct radiation along a preselected optical axis.

4,470,106

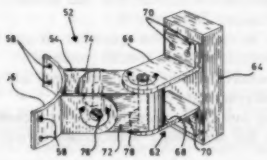
SHOP LIGHT

Larry G. Norton, 9520 Shipe Rd., Corryton, Tenn. 37721

Filed Apr. 6, 1983, Ser. No. 482,546

Int. Cl.³ F21V *21/00*

U.S. Cl. 362—398 **5 Claims**



1. An improved mounting device for use on a shop light for enhancing the selective illumination of a work area, said shop light being provided with a reflector guard member, said mounting device comprising:

a first clevis member having an arcuate base member including means for releasable attachment to such guard member and a pair of upstanding parallel arms, each of said arms being provided with an aligned aperture;

a permanent magnet member;

a second clevis member releasably attached to said magnet having a pair of parallel brackets, each of said brackets being provided with an aligned aperture;

a connector member having first and further ends, said first end proportioned to closely fit between said arms of said first clevis and provided with a first aperature, and said further end proportioned to closely fit between said brackets of said second clevis and provided with a further aperture, with axes of said first and further apertures of said connector member oriented perpendicularly to each other;

a first pivot member passing through said aligned apertures in said arms of said first clevis member and said first aperture of said connector member, said first pivot member being provided with means for producing frictional engagement between said arms and said first end of said connector member; and

a second pivot member passing through said apertures of said brackets of said second clevis and said further aperature of said connector member, said second pivot member being provided with means for producing frictional engagement of said further end of said connector member and said brackets of said second clevis.

4,470,107

DIGITAL REGULATING AND/OR CONTROL SYSTEM

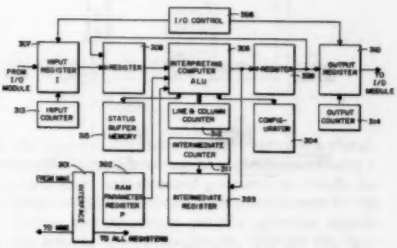
Heinz Daab, Darmstadt, Fed. Rep. of Germany, assignor to Honeywell GmbH, Offenbach, Fed. Rep. of Germany

Filed Apr. 15, 1982, Ser. No. 368,613

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1981, 3116549

Int. Cl.³ G05B *15/02*

U.S. Cl. 364—140 **14 Claims**



8. A digital control system for controlling the temperature of a space within a building, said system having initial input values stored therein line by line, at least two of said initial input values being space temperature of the space within the building and outside temperature of the air outside the building, said system also having parameters stored therein, said parameters being stored line by line as well as column by column, said system performing functions on said input values and said parameters, said functions being arranged column by column and line by line, said parameters and input values resulting, after performance of said functions, in values which are both outputs of a column and corresponding inputs of the next succeeding column, said system comprising:

X-register means for storing line by line said initial input values;

parameter register means for storing parameters line by line and column by column, said system utilizing said parameters dependent upon the column containing said functions and said parameters;

Y-register means for storing on a column basis output values line by line; and,

interpreting computer means for combining, if required, line by line and column by column said input values and said parameters according to predetermined program functions stored in a configurator, said interpreting computer means controlling said Y-register means to shift back the contents of said Y-register means to said X-register means if the maximum number of lines of each column is run through and if the maximum number of columns is not yet reached, said interpreting computer means controlling

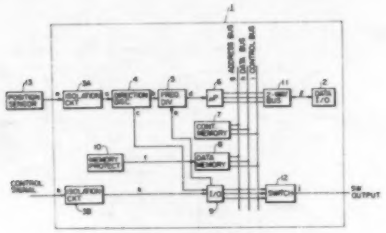
said Y-register means to deliver the contents of said Y-register means to an output if the maximum number of lines of the respective column is run through and if the maximum number of columns is reached.

4,470,108

POSITION DETECTING DEVICE

Yoshito Kato; Toshio Hashimoto, both of Aichi, and Masatoshi Kimura, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,251
Int. Cl.³ G05B 19/19
U.S. Cl. 364—167 8 Claims



8. A position detecting device for detecting the position of a movable object, comprising:

direction discriminating means for receiving a pulse train signal including forward movement direction pulses and reverse movement direction pulses to produce a direction discriminating signal and a first pulse signal indicative of the distance moved;

programmable frequency divider means for receiving the first pulse signal and a frequency-division ratio-selecting signal to produce a frequency-divided pulse signal which is obtained by subjecting the first pulse signal to frequency division in accordance with the frequency-division ratio-selecting signal, said divider means comprising means for counting the first pulse signal, memory means for receiving the output signal of said counting means as an address signal and the frequency division ratio selecting signal, and for providing an output signal representative of data stored in an address of said memory means, which address is assigned by the address signal, and monostable multivibrator means for receiving the output signal from said memory means and the first pulse signal to produce the frequency-divided pulse signal; and

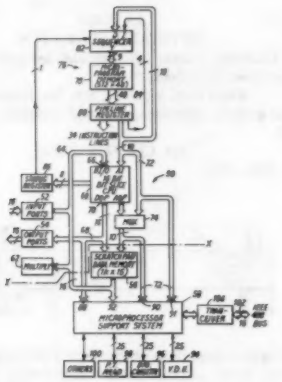
controlling means comprising data memory means for storing position number data, distance data and switch output data, said controlling means receiving the frequency-divided pulse signal and the direction discriminating signal and providing the switch output data obtained by subjecting the received signals and the data stored in said data memory means to a calculation in accordance with a predetermined control program.

4,470,109

REAL-TIME DATA SAMPLING WITH MEMORY SHARING BY HIGH SPEED I/O PROCESSOR AND CYCLE STEALING SUPPORT PROCESSOR

Guy W. W. McNally, Byfleet, England, assignor to British Broadcasting Corporation, London, England

Continuation of Ser. No. 23,709, Mar. 26, 1979, abandoned. This application Sep. 30, 1981, Ser. No. 307,251
Claims priority, application United Kingdom, Mar. 29, 1978, 1229578
Int. Cl.³ G06F 15/16
U.S. Cl. 364—200 11 Claims



1. A digital data processor, for real-time processing of data samples, comprising:

at least one data input adapted to receive input digital data samples;

at least one data output adapted to output processed digital data samples;

a first processor coupled between said data input and data output for performing processing operations on the data and adapted to operate with a plurality of machine cycles for each input data sample;

a second processor for performing support operations in respect of the data;

control input means connected to the second processor for input of control information;

a common memory section accessible to and by both said first processor and said second processor;

data bus means connecting said processors and said memory for transferring data therebetween;

address bus means connected to said processors and said memory for addressing appropriate memory locations; and

said first processor including program control means for controlling the operation of said processor and for providing addresses on said address bus means;

means connecting said processors whereby said first processor signals to said second processor the coming of one predetermined machine cycle between input samples, during which cycle said first processor relinguishes control of said address and data bus means and carries out operations not requiring access to said common memory section;

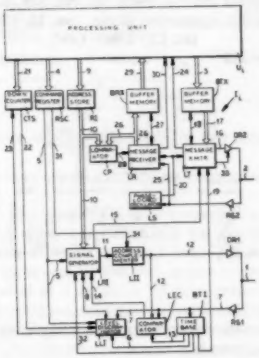
wherein said second processor is adapted to control said address bus means and said data bus means for said predetermined machine cycle whereby data can be transferred between said common memory section and said first processor without interrupting the processing performed by said first processor.

4,470,110

SYSTEM FOR DISTRIBUTED PRIORITY ARBITRATION AMONG SEVERAL PROCESSING UNITS COMPETING FOR ACCESS TO A COMMON DATA CHANNEL

Volmer Chiarottino, Villanova C. Se; Cesare Poggio, both of Turin, and Aldo Reali, Caselle, all of Italy, assignors to Cselt Centro Studi E Laboratori Telecommunicazioni S.p.A., Turin, Italy

Filed Nov. 4, 1981, Ser. No. 318,254
Claims priority, application Italy, Nov. 6, 1980, 68691 A/80
Int. Cl.³ G06F *15/16, 9/46*
U.S. Cl. 364—200 **6 Claims**



1. In a data-handling system with a multiplicity of processing units dialoguing with one another by an exchange of messages, the combination therewith of an interface individually associated with each processing unit, a common data channel and a common service line connected to all the interfaces associated with said processing units, and a timer emitting over said service line a synchronizing signal during an initial phase of a periodically recurring time slot,

said interface comprising:

message-transmitting means and message-receiving means inserted between said data channel and the associated processing unit;

storage means containing a combination of address bits characterizing the associated processing unit;

a time base connected to said service line for detecting the initial phase of a time slot and establishing in the remainder of the time slot, following said initial phase, a test phase followed by an acquisition phase;

signal-generating means having an input connected to said storage means and an output connected to said service line, said signal-generating means being controlled by said time base and responsive to commands from the associated processing unit for sending out said address bits during said acquisition phase preparatorily to the emission of data via said message-transmitting means;

comparison means connected to said service line and to said output of said signal-generating means for discovering, during each of several bit periods of said acquisition phase, a possible difference between the logic levels of an outgoing address bit from said signal-generating means and an incoming address bit concurrently appearing on said service line and, in the event of a predetermined difference indicating a higher priority of the incoming address bit, resetting said signal-transmitting means while preventing the emission of further outgoing address bits for the remainder of the time slot, said message-transmitting means being connected to said signal-generating means for activation thereby upon emission of the last address bit to deliver outgoing data to said channel in at least one subsequent time slot under the control of said time base;

discriminating means connected to said service line; and

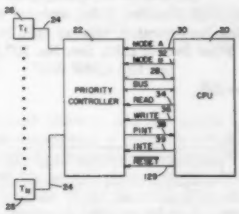
a down counter settable by the associated processing unit to a number (k−1) where k is the number of time slots required for a message to be sent out, said signal-generating means being controlled by said down counter for emitting a busy bit to said service line in said test phase of any time slot preceding the last time slot required by an outgoing message in the process of being transmitted, said down counter being decremented upon the emission of each busy bit by said signal-generating means, said discriminating means being controlled by said time base for inhibiting said signal-generating means during the acquisition phase of a time slot in whose test phase a busy bit is detected on said service line.

4,470,111

PRIORITY INTERRUPT CONTROLLER

Alfred D. Jenkins, and William E. Heaton, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 80,621, Oct. 1, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,783
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—200 **14 Claims**



1. A priority interrupt controller coupled between a plurality of peripheral devices each having an address representing a priority of access level and a central processor in which the control processor outputs a priority level arrangement for its peripheral devices and associated priority selection signals identifying the priority level arrangement, wherein the controller generates an interrupt signal to the processor in response to the raising of a request signal by one of the peripheral devices, comprising:

a plurality of receiving means each connected to a group of said peripheral devices for receiving a request signal from one of said peripheral devices, said receiving means outputting the address of the requesting peripheral device when enabled;

counter means for outputting a count having a first portion representing the address of one of said receiving means;

encoding means connected to said counter means and said receiving means for outputting an enabling signal to one of said receiving means in response to receiving the first portion of the count corresponding to the address of said receiving means;

memory means connected to said central processor and said counter means for outputting one of a plurality of priority level arrangements for each of the receiving means in accordance with a priority level arrangement transmitted from the central processor and stored in the memory means, said memory means adapted to output the address of the highest priority receiving means according to the priority level arrangement stored in the memory means in response to receiving the first portion of the count from said counter means;

means for storing the addresses of the previous interrupting peripheral device and its associated receiving means;

first comparator means coupled to said storing means and said enabled receiving means for comparing the address of the requesting peripheral device outputted by said enabled receiving means with the address of the previous inter-

rupting peripheral device outputted by said storing means, said first comparator means outputting a first control signal identifying the highest priority peripheral device;

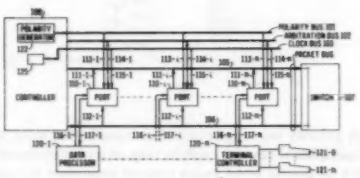
second comparator means connected to said storing means and said memory means for comparing the address of the receiving means associated with the previous requesting peripheral device with the address of the highest priority receiving means outputted by said memory means, said second comparator means outputting a second control signal identifying the highest priority receiving means;

and control means connected to said first and second comparator means and said central processor, said control means receiving said first and second control signals and said selecting signals for generating an interrupt signal to said central processor upon said first and second comparator means finding the priority level of the interrupting priority device and its associated receiving means equal to or greater than the priority level of the previous interrupting peripheral device and its associated receiving means.

4,470,112
CIRCUITRY FOR ALLOCATING ACCESS TO A DEMAND-SHARED BUS

James O. Dimmick, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 7, 1982, Ser. No. 337,673
Int. Cl.³ G06F *7/02*
U.S. Cl. 364—200 **14 Claims**



1. In a system for allocating access to a demand-shared facility among a plurality of units wherein each unit has a unique n digit priority number, and system comprising:

a system controller,

a polarity control conductor interconnecting said units with said controller,

an arbitration bus interconnecting all of said units,

means in each of said units for requesting access to said demand-shared facility,

means in each of said units currently requesting access to said demand-shared facility for concurrently superimposing the corresponding digits of the associated priority number onto said arbitration bus sequentially digit by digit,

means in said controller for applying an inversion signal at selected times to said polarity control conductor, wherein said superimposing means are responsive whenever said inversion signal is extant on said polarity control conductor for inverting said corresponding digits of said priority number prior to concurrently superimposing said digits on said arbitration bus sequentially digit by digit,

means in each of said requesting units for sequentially comparing the digit value on said arbitration bus as a digit is applied thereto with the magnitude of the corresponding digit each requesting unit applies,

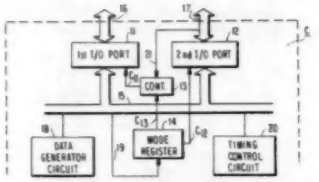
means in each of said requesting units for removing itself from facility access contention upon the detection by said comparing means of said requesting unit of a prescribed comparison result between the current digit value of said arbitration bus and the value of the corresponding digit currently applied to said arbitration bus by said unit,

and means for granting facility access to the requesting unit remaining in contention after all digits of said priority number of said remaining unit have been applied to said arbitration bus.

4,470,113
INFORMATION PROCESSING UNIT

Toshio Oura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1982, Ser. No. 339,223
Claims priority, application Japan, Jan. 13, 1981, 56-3382
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **4 Claims**



1. An information processing unit, comprising;

first external terminal means;

second external terminal means;

an internal bus provided within said information processing unit for transferring information;

first input-output port means coupled to said first external terminal means and said internal bus;

second input-output port means coupled to said second external terminal means and said internal bus;

a receiving circuit coupled to said second external terminal means and said first input-output port means, said receiving circuit receiving control signals from said second external terminal means and applying first signals to said first input-output port means in response to said received control signals, said first signals controlling said first input-output port means so as to allow data from said internal bus to be transferred via said first input-output port means to said first external terminal means or so as to allow data received at said first external terminal means to be transferred via said first input-output port means to said internal bus, according to the content of said first signals;

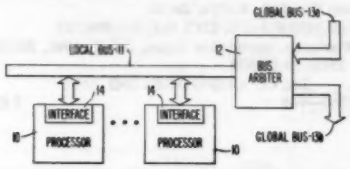
control signal generating means coupled to said internal bus for generating signals for controlling an external device coupled to said information processing unit; and

mode register means coupled to said internal bus, said second input-output port means and said receiving circuit for storing information generated by said information processing unit and for designating a first state in which said signals generated by said control signal generating means are transferred via said second input-output means and said second external terminal means to both a further device located externally of said information processing unit and to said receiving circuit, a second state in which control signals originating externally of said information processing unit are transferred to said receiving circuit via said second external terminal means, a third state in which data on said internal bus is transferred to said second external terminal means via said second input-output port means, and a fourth state in which data transmitted from a location external of said information processing unit is transferred from said second external terminal means to said internal bus via said second input-output port means.

4,470,114
HIGH SPEED INTERCONNECTION NETWORK FOR A CLUSTER OF PROCESSORS

Mark L. C. Gerhold, Paoli, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 1, 1982, Ser. No. 353,415
Int. Cl.³ G06F 15/16
U.S. Cl. 364—200 4 Claims



1. A network of processing elements, said network comprising:

a network bus to receive an information segment of signals in parallel;

a plurality of processing elements coupled to said bus, and

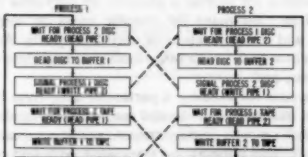
bus control means coupled to said bus and to each of said processing elements to grant each processing element, requesting access to said bus, access to said bus for one time period in a sequence of time periods, said access being granted according to a predetermined order;

said network bus including two unidirectional busses, one for transferring information to said control unit and one for transferring information from said control unit to one or more processing elements.

4,470,115
INPUT/OUTPUT METHOD

Larry A. Wehr, Piscataway, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 12, 1982, Ser. No. 357,799
Int. Cl.³ G06F 9/00
U.S. Cl. 364—300 9 Claims


PROCESS 1
PROCESS 2
WAIT FOR PROCESS 2 DISC READY (READ PIPE 1)
WAIT FOR PROCESS 1 DISC READY (READ PIPE 2)
READ DISC TO BUFFER 1
READ DISC TO BUFFER 2
SIGNAL PROCESS 1 DISC READY (WRITE PIPE 2)
SIGNAL PROCESS 2 DISC READY (WRITE PIPE 1)
WAIT FOR PROCESS 1 TAPE READY (READ PIPE 1)
WAIT FOR PROCESS 2 TAPE READY (READ PIPE 2)
WRITE BUFFER 1 TO TAPE
WRITE BUFFER 2 TO TAPE
SIGNAL PROCESS 1 TAPE READY (WRITE PIPE 2)
SIGNAL PROCESS 2 TAPE READY (WRITE PIPE 1)

1. In a computer system, the method of copying data from an input device to an output device using two concurrently running computer processes, each performing steps comprising

testing to determine read completion by the other process,

reading data from the input device,

signaling the other process of read completion,

testing to determine write completion by the other process,

writing data to the output device, and

signaling the other process of write completion.

4,470,116
DIGITAL FLIGHT DATA RECORDING SYSTEM

Michael Ratchford, East Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 2, 1982, Ser. No. 404,063
Int. Cl.³ G11B 5/00
U.S. Cl. 364—424 6 Claims

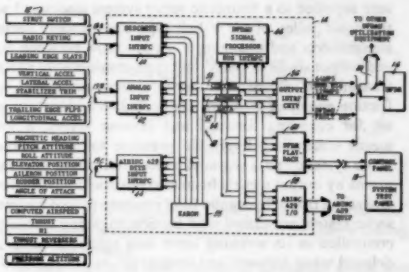
2. A flight data system for recording the actual sensed values of flight parameters from a plurality of aircraft sensors at different flight modes of the aircraft flight profile, comprising:

data recording means, for providing nonvolatile recording of signal representations of the sensed flight parameter values; and

data acquisition means, having signal processing means for providing said signal representations to said flight data recording means, and including signal memory means for storing signals;

as characterized by:

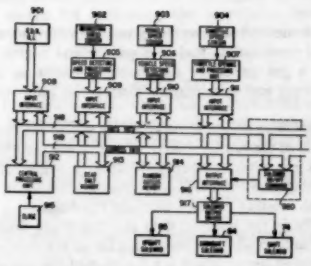
said data acquisition means further including test means for performing operational self testing of the flight data system and aircraft sensors, said test means including program means comprising a plurality of program signals stored in said signal memory means and representing a deterministic flight mode algorithm indicative of optimum values of selected flight parameters at different flight modes of the aircraft flight profile, said signal processing means comparing the sensed signal value of each selected flight parameter with the related optimum signal value of said program means for the same flight mode and providing a test failure signal to said signal memory means in response to each difference signal magnitude therebetween.



4,470,117
CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION FOR VEHICLES

Nobuaki Miki, Kariya, and Shoji Yokoyama, Anjo, both of Japan, assignors to Aisin Warner Kabushiki Kaisha, Anjo, Japan

Filed Mar. 26, 1981, Ser. No. 247,764
Claims priority, application Japan, Mar. 29, 1980, 55-41009
Int. Cl.³ F16H 5/66, 9/18, 11/06
U.S. Cl. 364—424.1 4 Claims



1. A control system for a continuously variable transmission for vehicles having a V-belt type continuously variable transmission and a planetary gear set for changing forward and reverse drives, said control system comprising

an electric control circuit which comprises means for receiving input signals, said input signals comprising shift lever setting positions, revolution speed of input pulley, vehicle speed, and carburetor throttle opening, detection and processing circuits for converting said input signals into output voltage signals, an output interface, and a solenoid output driver for converting output of said output interface into operating output for solenoids,

a shift control mechanism which comprises a hydraulic regulator supplying line pressure dependent on the vehicle running conditions, a manual valve geared with a shift lever, a torque ratio control device controlled by said electric control circuit for regulating hydraulic fluid pressure supplied to a hydraulic servo system associated with the input pulley of the V-belt type continuously variable transmission and changing a torque ratio between input and output shafts of the V-belt type continuously variable transmission, a hydraulic servo system associated with friction engaging elements connected to a planetary gear set for changing forward and reverse drives, a valve means controlling hydraulic pressure to said hydraulic servo system, and a solenoid valve controlling said valve means by output signals from said electric control circuit, wherein a rise of hydraulic fluid pressure to said hydraulic servo system associated with friction engaging elements is controlled in its working upon said solenoid valve and delayed when forward and reverse drives are changed by said shift lever.

4,470,118

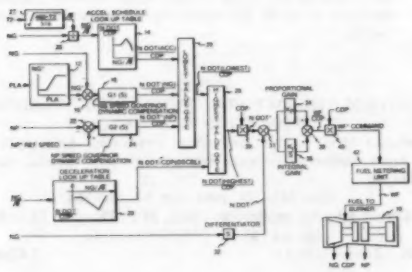
GAS TURBINE ENGINE FUEL CONTROL

Terry Morrison, Vernon, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,530

Int. Cl.³ F02C *9/02, 9/14*

U.S. Cl. 364—431.02 **7 Claims**



1. In a method for exercising control over the rate of delivery of a combustible fuel to a gas turbine engine, the engine having a gas generator and being operable in substantially steady state and acceleration modes, the improvement comprising:

providing an acceleration schedule which is a function of the ratio of the rate of change of engine gas generator speed to gas generator compressor discharge pressure;

selecting data from said acceleration schedule in accordance with existing engine operating conditions;

modifying the selected data in accordance with the actual instantaneous compressor discharge pressure to provide a demand signal which is a function of the rate of change of gas generator speed;

comparing the demand signal with the actual rate of change of gas generator speed to provide an error signal;

adjusting said error signal to provide a fuel flow rate change command; and

employing said command to determine the rate of flow of fuel to the engine.

4,470,119

MOBILE NAVIGATOR

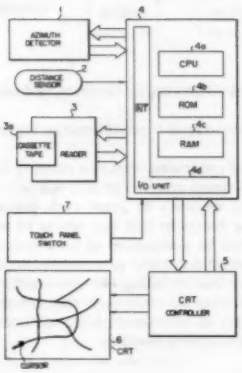
Koshi Hasebe, Anjo; Shinzo Totani, Nagoya; Kazuo Muramoto, Ichinomiya; Hajime Mikuni, Kariya; Kazushi Akutsu, Kariya, and Kazuaki Minami, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 6, 1982, Ser. No. 395,339

Claims priority, application Japan, Jul. 7, 1981, 56-106572; Dec. 10, 1981, 56-199898

Int. Cl.³ G06F *15/50*; G09B *29/10*

U.S. Cl. 364—449 **3 Claims**



1. A mobile navigator comprising:

distance detecting means for detecting the distance a vehicle has run;

azimuth detecting means for detecting the azimuth in which said vehicle progresses;

display means;

storage means for storing a plurality of map data to be displayed as road maps for specific areas on said display means and different kinds of earth's magnetic field information associated with said pluality of map data of different areas; and

control means for reading a particular map data from said storage means so that a road map of a particular area is displayed on said display means, reading certain earth's magnetic field information associated with said particular map data from said storage means, and calculating a current position of said running vehicle on the basis of said read earth's magnetic field information, said azimuth detected by said azimuth detecting means and said distance detected by said distance detecting means, thereby to allow said calculated current position to be displayed on the screen of said display means on which a road map is already displayed.

4,470,120

DEMODULATION TECHNIQUE FOR RIP DETECTOR SIGNALS

Lyle M. Haylett, Mantua, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

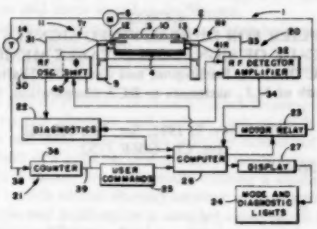
Filed Jul. 31, 1981, Ser. No. 288,883

Int. Cl.³ G06F *15/46*; G08B *21/00*

U.S. Cl. 364—507 **58 Claims**

1. In a conveyor belt rip detector system in which antennas representative of belt integrity are sequentially carried past a rip detector station, including transmitter means for transmitting an AC transmitter signal and receiver means for receiving

such AC transmitter signal coupled thereto by respective antennas, the improvement comprising:



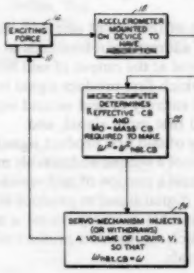
lock in amplifier means for improving the signal to noise ratio of the AC transmitter signal coupled by such antennas to said receiver means.

4,470,121

MULTI-FREQUENCY VIBRATION CONTROLLER USING FLUID-FILLED CANTILEVER BEAM FOR VIBRATION EXCITATION & ABSORBTION

Frederick J. Ebert, Elmwood Park, N.J., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 17, 1981, Ser. No. 293,733
Int. Cl.³ G05F *15/50, 15/31*; G05B *15/02*; G01G *3/142*
U.S. Cl. 364—508 **15 Claims**


EXCITING FORCE
ACCELEROMETER MOUNTED ON DEVICE TO HAVE ABSORPTION
EXCITING FORCE FREQUENCY
MICRO COMPUTER DETERMINES EFFECTIVE CB AND Mo = MASS CB REQUIRED TO MAKE
SERVO-MECHANISM INJECTS (OR WITHDRAWS) A VOLUME OF LIQUID, V, SO THAT

1. A multi-frequency vibration controller comprising: a vibration prone structure, a cantilever beam of selected natural frequency connected to the vibration prone structure so as to vibrate therewith and having a hollow port into which fluid may be added or withdrawn to vary the cantilever beam total mass and natural frequency,

means operatively connected to the vibration prone structure to continuously determine the present vibrating frequency of the vibration prone structure and to generate a first signal representative thereof,

means responsive to said first signal and operable to determine the optimum total mass of the cantilever beam required to cause the cantilever beam natural frequency to be equal to or selectively unequal to the frequency of the present vibrations of the vibration prone structure so determined, and to generate a second signal representative thereof, and

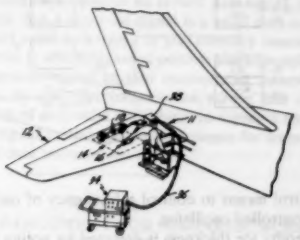
means responseve to said second signal and operable to selectively introduce or withdraw fluid to or from the hollow portion of the cantilever beam to produce said optimum cantilever beam total mass and hence natural frequency to be equal to or selectively unequal to the frequency of the present vibrations of the vibration prone structure to thereby control the vibrations of the vibration prone structure.

4,470,122

INTEGRATED ELECTRO-OPTICAL POSITION SENSING, WORKPIECE PROBING AND DISPLAY METHOD AND APPARATUS

Dennis P. Sarr, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1981, Ser. No. 306,952
Int. Cl.³ G01B *7/34*
U.S. Cl. 364—559 **17 Claims**



1. An integrated probing, probe position sensing and probe signal versus position indicating system for use in testing work pieces, comprising:

an independently movable signal producing probe means for producing an output probe signal of variable value representing a predetermined characteristic of a workpiece;

a spot source of radiation mounted with the said probe means for movement as a unit therewith;

first and second directional, radiation sensor means, mounted in spaced apart relation and for movement so as to scan across said radiation source means;

first and second angle determining means coupled to said first and second directional radiation sensor means, respectively, for producing signals representing the angles of said first and second directional radiation sensor means when they are respectively aligned with said radiation source means;

position determining control means for receiving said signals representing said angles from said first and second angle determining means and for producing position coordinate signals representing the position coordinates of said radiation source means and hence said probe means in response to said signals representing said angles;

signal correlating control means for receiving said probe output signal from said probe means and for receiving said position coordinate signals from said position determining control means and in response thereto correlating said output probe signal with said position coordinate signals; and,

indicating means responsive to said signal correlating control means for indicating the correlation between said output probe signal and said position coordinate signals.

4,470,123

MICROWAVE ICE ACCRETION METER

Bertram Magenheim, Bethesda, Md., and James K. Rocks, McLean, Va., assignors to Miami R & D Limited Partnership, Bethesda, Md.

Filed Jan. 5, 1982, Ser. No. 337,200
Int. Cl.³ G01B *13/04*
U.S. Cl. 364—563 **8 Claims**

1. An ice detector and thickness measurement system comprising:

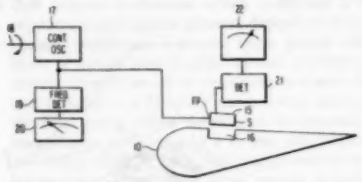
a controlled oscillator,

a shorted surface waveguide coupled to said controlled oscillator at a feed point with a short located a fixed distance from said feed point,

means to mount said waveguide in a location subject to ice accretion,

detector means coupled to said surface wave guide at a point displaced from said feed point and responsive to electrical energy incident at said detector means for indicating electrical energy incident thereon,

measurement means coupled to said controlled oscillator for indicating frequency deviation of said controlled oscillator from a predetermined frequency, and



control means to control a frequency of oscillation of said controlled oscillator,

whereby ice thickness is detected by noting said frequency deviation of said measurement means when said control means controls said frequency of oscillation to produce a maximum detected energy at said detector means.

4,470,124

METHOD OF ADJUSTING THE ZERO-POINT OF RATE TYPE SENSOR

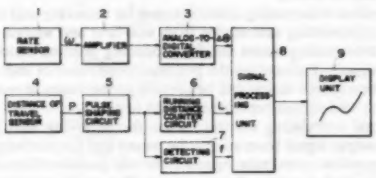
Katsutoshi Tagami; Tsuneo Takahashi, both of Saitama; Shinichiro Yasui, Tokyo; Akira Ichikawa, Saitama; Yasuzi Kitasei, Saitama, and Akira Hidaka, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 384,011

Claims priority, application Japan, Jun. 1, 1981, 56-80796[U]; Jun. 4, 1981, 56-86134

Int. Cl.[3] **G01L** *25/00;* **G06F** *15/50*

U.S. Cl. 364—571 **2 Claims**



1. A method of adjusting the zero-level of a rate sensor which comprises the steps of:

detecting a current state of an automotive vehicle, whether it is in a state of travel or standing still, in accordance with the output from travel distance sensing means which generates electric pulse signals for a given unit distance travelled by said vehicle;

averaging the sampled outputs from said rate sensor installed upon said vehicle, during the period from immediately after the detection of a standing still state thereof to the moment right before a starting of travel thereof;

determining the thus-obtained averaged value as a current drifting value of said sensor; and

subtracting the thus-determined drifting value from a current angle of deviation value as obtained in a turning motion during the normal travelling operation of said vehicle;

whereby a proper detection of a current drift value of said rate sensor is ensured, free from any disturbances, and high accuracy in the zero-level adjustment of said rate sensor is ensured in accordance with the thus-obtained proper value of drifting.

4,470,125

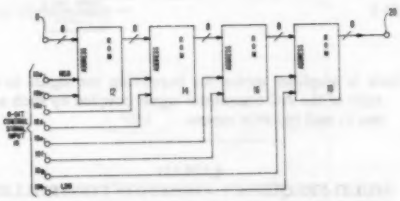
MULTIPLIER FOR DIGITAL VIDEO SIGNALS USING A CASCADE OF SIGNAL-SELECTABLE MEMORIES

Robert A. Dischert, Burlington, and James M. Walter, Columbus, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,460

Int. Cl.[3] **G06F** *7/52*

U.S. Cl. 364—760 **8 Claims**



1. A method for multiplying first and second digital signals together, comprising the steps of:

dividing the bits of said first digital signal into a subset and a remainder of the set of bits of said first digital signal;

applying the entirety of said second digital signal to a subset of the address input terminals of a first addressable memory means thereby leaving a remainder of address input terminal;

applying said subset of the bits of said first digital signal to said remainder of address input terminals so as to generate a first product signal at the output of said first addressable memory means which first product signal is a function of the values of said entirety of said second input signal and said subset of said first input signal; and

applying the entirety of said first product signal to a subset of the input terminals of a second addressable memory means together with at least a portion of said remainder of the set of bits of said first digital signal to produce at the output of said second addressable memory means a second digital product signal which represents a product of said first and second digital signals.

4,470,126

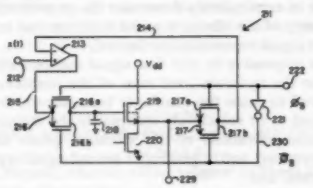
PROGRAMMABLE TRANSVERSAL FILTER

Yusuf A. Haque, San Jose, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 29, 1981, Ser. No. 316,183

Int. Cl.[3] **G06G** *7/02*

U.S. Cl. 364—825 **6 Claims**



1. A programmable transversal filter comprising:

an input terminal for receiving an input signal to be filtered;

a first plurality of N sample and hold means, where N is a selected positive integer, each of said N sample and hold means having an output lead and having an input lead for direct connection to said input terminal;

a first plurality of N switch means for connecting a selected one of said sample and hold means to said input terminal such that said selected one of said sample and hold means receives said input signal to be filtered;

a first plurality of N multiplying means, each having an input lead and an output lead;

a summing means having a plurality of N input leads and an output lead;

a second plurality of N×N switch means forming a cross-point switch allowing said output lead of each said N sample and hold means to be uniquely connected to said input lead of a selected one of said N multiplying means;

first control means for sequentially closing a single one of said N switch means, thereby causing to be stored in said N sample and hold means a sampled input signal from N previous time instants;

second control means for operating said second plurality of N×N switch means such that said output lead of each of said N sample and hold means is uniquely connected to said input lead of a selected one of said N multiplying means; and

means for uniquely connecting said output lead of each of said N multiplying means to a selected one of said N input leads of said summing means;

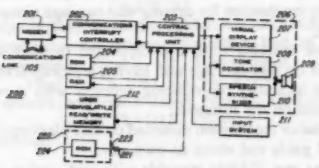
whereby said input signal is filtered, providing a filtered output signal on said output terminal of said summing means.

4,470,127

DATA TERMINAL WITH ERROR CHECKING FILE TRANSFER MODE

E. Earle Thompson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 18, 1981, Ser. No. 264,906
Int. Cl.³ G06F 9/00
U.S. Cl. 364—900 **3 Claims**



1. A data terminal means comprising:

a receiving means connected to a data transmission means for receiving signals transmitted by the data transmission means;

a transmitting means connected to the data transmission means for generating signals for transmission by the data transmission means;

an input means for receiving user input signals;

a central processing unit connected to said receiving means, said transmitting means and said input means for performing data processing functions under program control;

a memory means connected to said central processing means for storing therein signals applied thereto by said central processing unit;

a plug-in port connected to said central processing unit; and

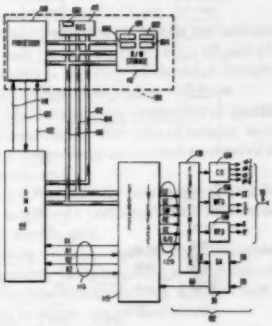
a plug-in module having a connector for connection to said plug-in port and a read only memory means connected to said connector for permanently storing therein a control program for controlling said central processing unit via said plug-in port, said control program including means for controlling said central processing unit to determine whether a signal received by said receiving means is a transfer command signal and upon determination that a received signal is a transfer command signal controlling said central processing unit to designate a portion of said memory means to store received signals therein corresponding to user input signals received from said input means, and means for controlling said central processing unit to determine if a signal received by said receiving means is a valid data signal or an invalid data signal, upon determination that a received signal is a valid data signal to supply said valid data signal to said memory means for storage therein at said designated portion and to supply an acknowledgement signal to said transmitting means for transmission by the data transmission means and upon determination of an invalid data signal to supply a nonacknowledge signal to said transmitting means for transmission by said data transmission means.

4,470,128

CONTROL ARRANGEMENT FOR MAGNETIC BUBBLE MEMORIES

John M. Higdon, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1981, Ser. No. 306,792
Int. Cl.³ G11C 19/08
U.S. Cl. 364—900 **10 Claims**



1. A control system for a magnetic bubble memory comprising:

a main data processor for generating bubble memory control string coded binary words and for normal data processing functions;

a direct-access data storage device, operative to receive coded binary words from said data processor,

magnetic bubble memory apparatus including at least one stream of magnetic bubble data elements the state of each of which represents data that are arranged along one or more paths defining multiple data element receiving locations, said magnetic bubble apparatus including reading means, enabled by a first control signal, for producing a data signal indicative of said state of a magnetic bubble data element at a first predetermined data element receiving location,

writing means for selectively generating a magnetic bubble, in accordance with a second control signal, for a data element located at a second predetermined data element receiving location, and

advance means for incrementally advancing data elements along said path(s) responsive to a third control signal;

said main data processor having logic and control means to determine all strings of coded binary words including said control signals and to write said strings of coded binary words into said direct-access storage device for permitting

indirect processor control of said bubble memory apparatus;

interface means for receiving and for decoding said coded binary words to produce corresponding control signals;

means for applying control signals produced at said interface means to said magnetic bubble apparatus; and

a direct memory access device controllable by said processor for causing said strings of words to be transferred from said direct access storage device to said interface means to operate said magnetic bubble apparatus with control signals in selected combinations defined by said processor while said main processor conducts other data processing.

4,470,129

PAGE MODIFICATION METHOD IN A PRINTER SUBSYSTEM OF THE PARTIAL PAGE BUFFER COMPOSING TYPE

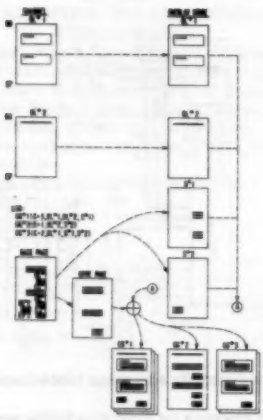
John R. Disbrow; Everett T. Eiselen, both of Los Gatos, Calif.; Gerald I. Findley, Tucson, Ariz.; Stephen G. Luning, and David T. Wang, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/US81/01380, § 371 Date Jan. 29, 1982, § 102(e) Date Jan. 29, 1982, PCT Pub. No. WO83/01521, PCT Pub. Date Apr. 28, 1983

PCT Filed Oct. 14, 1981, Ser. No. 345,943

Int. Cl.³ G06F *3/12*

U.S. Cl. 364—900 **4 Claims**



1. A method for page modification and copy group control in a system for printing text in raster form on a print medium, said system including means for storing fonts of character raster patterns, a buffer of less than page capacity into which selected patterns may be written, and control means coupling the storage means and buffer for interpreting information applied to the system, arbitrary sequence characters are mapped into a linked list of character placement representation of a page of coded characters, said list operatively controlling the buffer character fill operations, the characters being buffer accessible to the system in row major order, characterized by the steps of:

applying a character stream formatted to include a set of overlays and a copy control segment to the control means, said overlay set consisting of characters to be selectively added to the page, each segment defining copy groups and a concordance of the page, copy group, and overlay subset;

duplicating a portion of the linked list for each copy group defined by the segment;

forming a linked list addendum for each copy group of its counterpart overlay subset; and

filling the buffer in the position and order governed by the list and counterpart addendum as each copy group is processed by the control means.

4,470,130

APPARATUS FOR LIFTING AND LOWERING A LINEAR TRACKING TONE ARM IN A RECORD PLAYER

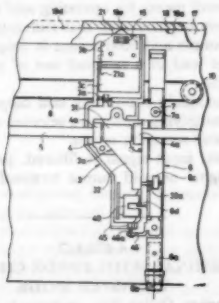
Tetsuro Sakaki, Yokohama, and Akira Yamanaka, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 19, 1982, Ser. No. 399,696

Claims priority, application Japan, Jul. 20, 1981, 56-107589[U]

Int. Cl.³ G11B *21/08, 3/36*

U.S. Cl. 369—230 **1 Claim**



1. An apparatus for lifting and lowering a linear tracking tone arm in a record player having a turntable, comprising:

a platform;

a guide rod mounted on said platform for angular movement about its own axis;

a carriage slidably movable along said guide rod;

a drive mechanism for driving said carriage along said guide rod;

a linear tracking tone arm supported through a universal joint on said carriage and having a pickup stylus engageable in sound reproducing relation with a record disc placed on the turntable;

an actuator mechanism mounted on said platform for turning said guide rod about its own axis;

a swing arm slidably movable with said carriage along said guide rod and angularly movable with said guide rod, said swing arm being operatively connected with said linear tracking tone arm, whereby said linear tracking tone arm can be lifted away from the record disc or lowered against the record disc in response to angular movement of said swing arm caused by said guide rod turned about its own axis by said actuator mechanism;

a guide frame mounted on said carriage, said linear racking tone arm having a pin movable in coaction with said guide frame for cancelling any tracking error which said pickup stylus undergoes when it is to be lifted off the record disc and for guiding said linear tracking tone arm to return tp a starting position, said guide frame including a channel portion having a groove therein, an oblique portion and a bent portion which extend from said channel portion toward said carriage, said pin extending longitudinally of said linear tracking tone arm into said guide frame, said pin being movable upon said stylus being lifted off the record disc for a first interval perpendicular to the record disc prior to engagement with said oblique portion and then for a successive second interval along said oblique portion into said groove until the pin reaches said starting position, whereby said stylus can be elevated out of a sound groove on the record disc without contacting walls

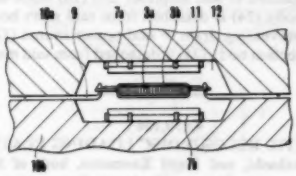
of the sound groove while said pin travels through said first interval.

4,470,131

BUBBLE MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

Shigeharu Hatayama, and Hirofumi Ota, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1982, Ser. No. 402,738
Claims priority, application Japan, Aug. 7, 1981, 56-123004
Int. Cl.³ G11C 19/08
U.S. Cl. 365—2 2 Claims



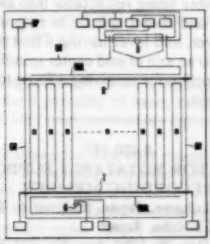
1. A bubble memory device comprising an insulating substrate holding a bubble memory chip secured thereto, X- and Y-direction driving coils wound on said insulating substrate for providing an in-plane rotating filed to said chip, a lead frame secured to edge portions of said insulating substrate, magnet blocks disposed above and below said coils and including permanent magnets and field homogenizer plates for providing a bias field to said chip, said magnet blocks being initially held only by their own magnetic force and finally embedded in a molding resin surrounding said insulating substrate, coils and lead frame integrally and immovably secured by said resin without any other structure than said resin.

4,470,132

MAGNETIC BUBBLE MEMORY DEVICE

Shinzo Matsumoto, and Minoru Hiroshima, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1982, Ser. No. 439,807
Claims priority, application Japan, Nov. 11, 1981, 56-179698
Int. Cl.³ G11C 19/08
U.S. Cl. 365—43 2 Claims



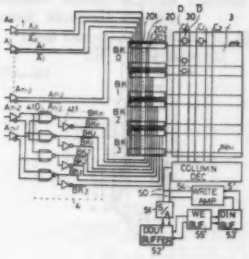
1. In a magnetic bubble memory device comprising a number of magnetic bubble propagation bit segments arrayed to form a magnetic bubble propagation path and having each a pattern of a length L in a direction of propagation of magnetic bubbles being less than 3.4 D where D is the average diameter of the magnetic bubbles and is not greater than 2.0μ, the improvement wherein the height H of the pattern of the magnetic bubble propagation bit segments in a direction perpendicular to the propagation direction of magnetic bubbles is set to be in a range of $0.75 \times L \leq H \leq 1.1 \times L$.

4,470,133

MEMORY CIRCUIT HAVING A DECODER

Kazuo Tanimoto, Tama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 16, 1981, Ser. No. 331,289
Claims priority, application Japan, Dec. 29, 1980, 55-187955
Int. Cl.³ G11C 7/00
U.S. Cl. 365—227 3 Claims



1. A memory circuit operatively connected to receive address signals and operatively connectable to a voltage source, comprising:

a plurality of word lines;

a plurality of bit lines;

a plurality of memory cells located at the intersections of said word lines and said bit lines;

a decoder having a plurality of blocks, for selecting one of said word lines or said bit lines, each of said plurality of blocks including a plurality of decoder circuits, each of said decoder circuits comprising:

a plurality of MOS transistors, connected in parallel to each other and connected to the voltage source, having gates, respectively, operatively connected to receive one of the address signals; and

switching means, operatively connected to said MOS transistors, for selectively connecting said MOS transistors to the voltage source; and

signal generating means, operatively connected to said switching means, for generating a block selecting signal and providing the block selecting signal to said switching means so as to select one of said blocks.

4,470,134

MARSH CASE FOR A GEOPHONE

William O. McNeel, Houston, Tex., assignor to Litton Resources Systems, Inc., Alvin, Tex.

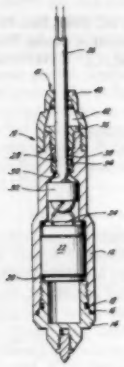
Filed Mar. 26, 1982, Ser. No. 362,352
Int. Cl.³ G01V 1/16; H01R 13/58
U.S. Cl. 367—188 2 Claims

1. An improved watertight geophone marsh case for use in wetlands, having a chamber for removably receiving a geophone module, having a cable entry port at one end thereof for receiving an electric cable therethrough to transmit signals from said geophone module, a sealing washer around said cable and seated in said cable entry port, the cable entry port being of a generally cylindrical configuration and including a perforated divider between the chamber and the cylindrical cable entry port, comprising in combination:

an internal cable anchor secured to the cable and disposed inside the chamber betwixt the geophone module and one side of the perforated divider, one end of said cable being inserted through the divider perforation;

a compression sleeve and a spacer, threadably engaging said cylindrical cable entry port internally, for urging said sealing washer against said divider; and

an external cable anchor assembly, threadably engaging said cylindrical cable entry port externally and including an



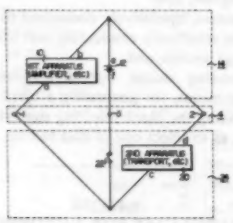
interiorly serrated collet for shrinkably and firmly gripping said cable.

4,470,135

CONNECTION DEVICE WITH AUTOMATIC DISCONNECTION OF POWER SUPPLY WHEN CONNECTION MEMBERS ARE DISCONNECTED

Akira Osanai, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 138,196, Apr. 7, 1980, abandoned. This application Feb. 17, 1982, Ser. No. 349,679
Claims priority, application Japan, Apr. 20, 1979, 54-52984
Int. Cl.³ H02J 1/00
U.S. Cl. 369—11 12 Claims



1. A tape player apparatus for an automobile, comprising:

(a) a main body (14) carried on the automobile, said main body (14) including a power source (12) having two power source terminals (e, f) and an amplifier unit (10) having two power receiving terminals (a, b) to which power is to be supplied from said power source (12);

(b) a connection body (24) selectively connectable to and detachable from said main body (14), said connection body (24) including a tape transport unit (20) having two power receiving terminals (c, d) to which power is to be supplied from said power source (12) when said connection body (24) is connected to said main body (14);

(c) means for detachably and mechanically mounting said connection body (24) in said main body (14); and

(d) connection means (4) for coupling said main body (14) with said connection body (24), said connection means (4) including first, second and third connection portions (1, 2, 3) arranged such that when said connection body (24) is connected to said main body (14), said first connection portion (1) connects one terminal (a) of said amplifier unit (10) to one terminal (c) of said tape transport unit (20), said second connection portion (2) connects the other terminal (b) of said amplifier unit (10) to the other terminal (d) of said tape transport unit (20), and said third connection portion (3) connects said one terminal (c) of said tape transport unit (20) to a power source terminal (f) of said power source (12), the other power source terminal (e) of said power source (12) being connected to said other terminal (b) of said amplifier unit (10);

whereby when said connection body (24) is disconnected from said main body (14), said connection means (4) is disconnected so as to disconnect said power source (12) from both said amplifier and tape transport units (10, 20);

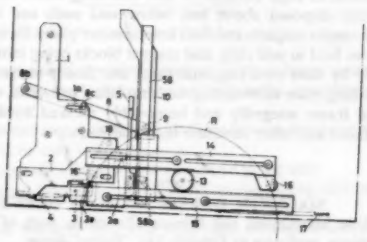
said main body (14) having no switch circuit means therein which would allow said power source (12) to be electrically connected to said amplifier unit (10) when said connection body (24) is detached from said main body (14), thereby preventing drain of said power source (12) when said connection body (24) is detached from said main body (14).

4,470,136

AUTOMATIC RECORD DISC LOADING PLAYERS

Hideyuki Takahashi, and Isami Kenmotsu, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,136
Claims priority, application Japan, Nov. 19, 1980, 55-163955
Int. Cl.³ G11B 17/04
U.S. Cl. 369—77.1 20 Claims



1. An automatic record disc loading player comprising:

a horizontally movable center spindle (69); and means for holding a record disc, and means for holding including an eccentric member (71) and a rotatable lever (72), said eccentric member being retractable into and radially projectable from said center spindle in response to the rotation of said lever, said lever having a first portion substantially parallel to an axis of said center spindle, and a second engagement portion for receiving a force tending to rotate said first portion.

4,470,137

APPARATUS FOR ROTATABLY SUPPORTING A RECORDING MEMBER

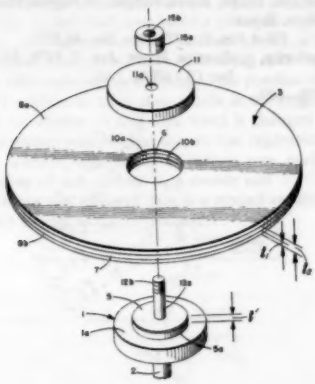
Yoshiaki Tago, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 20, 1981, Ser. No. 313,225
Claims priority, application Japan, Nov. 17, 1980, 55-161679
Int. Cl.³ G11B 7/24, 23/14
U.S. Cl. 369—100 9 Claims

1. Apparatus for rotatably supporting a recording member having first and second spaced recording portions, said first and second recording portions each having a respective centrally located aperture;

said apparatus comprising a rotating means for rotatably supporting said first and said second recording portions, said rotating means including a centering means cooperating with the aperture of a selected one of said recording

portions independent of the aperture of the other recording portion for centering said recording member on said rotating means,



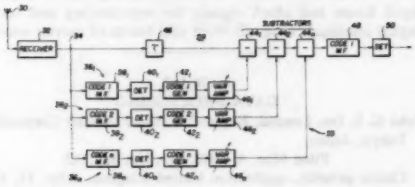
wherein said centering means has a length such that it enters the aperture in the selected one of said recording portions but does not protrude into the aperture of the other recording portion.

4,470,138

NON-ORTHOGONAL MOBILE SUBSCRIBER MULTIPLE ACCESS SYSTEM

Frank S. Gutleber, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 4, 1982, Ser. No. 439,232
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—18 **18 Claims**



1. A non-orthogonal code division multiple access communications system for a plurality of users, comprising:

a plurality of user communications apparatus, one for each user;

each said user apparatus including means for generating and transmitting a mutually different noise coded signal to another said user apparatus;

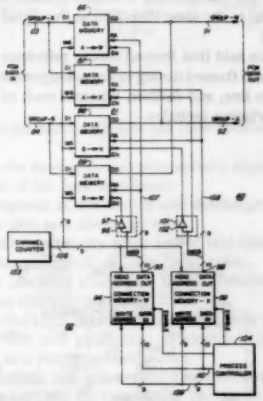
each said user apparatus further including, means for receiving a composite noise coded signal including a desired noise coded signal transmitted from a predetermined said user apparatus and any undesired interfering noise coded signal transmitted from at least one other said user apparatus, a plurality of noise code selective circuit means in separate signal paths for detecting said interfering noise coded signal included in said composite signal, respective circuit means coupled to said plurality of noise code selective circuit means for regenerating a replica of said interfering noise coded signal detected devoid of said desired noise coded signal, signal combiner means coupled to said composite signal received and said replica signals and being responsive thereto to operably cancel, by the process of subtraction, said interfering signal from said composite signal and leaving said desired signal, and detector means coupled to said signal combiner means for detecting said desired signal free of undesired interference.

4,470,139

SWITCHING NETWORK FOR USE IN A TIME DIVISION MULTIPLEX SYSTEM

Ernst A. Munter, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 28, 1981, Ser. No. 335,262
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—66 **11 Claims**



1. A switching network for use in a TDM (time division multiplex) system for switching digital signals carried in timeslots on N incoming buses to timeslots on M outgoing buses, wherein N and M are positive integers, $N \geqq 2$, and $M \geqq 2$, said network comprising:

a plurality of storage means, said plurality of storage means being divided into N first groupings of M storage means each, each said first grouping being responsive to a respective incoming bus; and

each outgoing bus being responsive to a respective one of M second groupings of said storage means, each said second grouping comprising N storage means, one from each of said first groupings.

4,470,140

DISTRIBUTED SWITCHING NETWORK

Dennis K. Coffey, 555 W. Middlefield Rd., Apt. R105, Mountain View, Calif. 94043

Filed Sep. 30, 1980, Ser. No. 192,641
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—86 **21 Claims**

1. Structure comprising

transmission means for carrying signals divided into frames, said frames being divided into a plurality of time slots; and

at least three means for interfacing selected equipments to said transmission means whereby each of said at least three means for interfacing is capable of receiving selected signals carried on said transmission means and of delivering intermediate signals derived from said selected signals to a corresponding one of said equipments, and of transmitting second signals to said transmission means;

wherein each of said means for interfacing includes means for selecting any one of said plurality of time slots into which said means for interfacing can transmit said second signals;

wherein each of said means for interfacing is connected in

parallel to said transmission means such that the failure of one or more means for interfacing does not prevent the operation of the remaining means for interfacing, and

wherein said transmission means comprises

a transmit line capable of carrying said signals divided into frames;

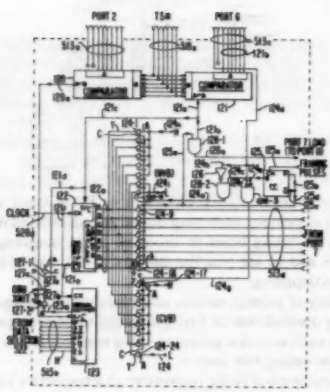
a receive line capable of carrying said signals divided into frames;

means for transferring signals from said transmit line to said receive line;

means for transmitting a first framed timing reference signal in the same direction as that signal on the transmit line which is ultimately transferred to the receive line;

means for transmitting a second framed timing reference signal in the same direction as the signal on said receive line;

wherein said first framed timing reference signal and said second framed timing reference signal are carried by the same line, and further, wherein each of said means for interfacing includes



means for receiving second signals transmitted onto said transmission means by another of said at least three means for interfacing,

means for delivering to said transmission means second signals to be received by said another of said at least three means for interfacing, and

means for establishing a connection between two of said at least three means for interfacing,

wherein at least one of said at least three means for interfacing includes means for interpreting said signals transmitted onto said transmission means by another of said at least three means for interfacing and received by said at least one of said at least three means for interfacing as comprising an address code which is interpreted by said at least one of said at least three means for interfacing to have specific meaning, and further

wherein said address code is contained in repetitions of said time slot a multiple of times before it is interpreted by said at least one of said at least three means for interfacing as code.

4,470,141

MULTI-DIRECTION TIME DIVISION MULTIPLEX COMMUNICATION SYSTEM

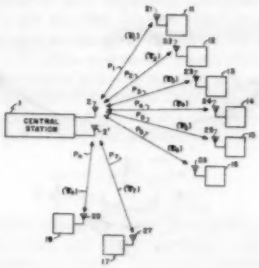
Masami Takada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 46,055

Claims priority, application Japan, Jun. 6, 1978, 53/68581

Int. Cl.³ H04J 3/06

U.S. Cl. 370—104 **8 Claims**



4. A multi-direction time division multiplex communication system comprising a central station and a plurality of satellite stations; means in said central station for transmitting continuously modulated signals having time slots which are individually assigned to each of said satellite stations, each of said time slot signals including frame, clock and first digital intelligence signals; means in each of said satellite stations effective during its individually assigned time slot for separating said frame and clock signals from said continuously modulated signals; means in each of said satellite stations, responsive to said separated signals for retiming and transmitting second digital intelligence signals in the form of bursts of modulated carrier waves, all of said carrier waves having the same frequency; means in said central station for delaying at least said frame and clock signals; and means in said central stations, responsive to the delayed frame and clock signals for reproducing said second digital intelligence signals from said bursts of carrier waves.

4,470,142

DATA PROCESSING

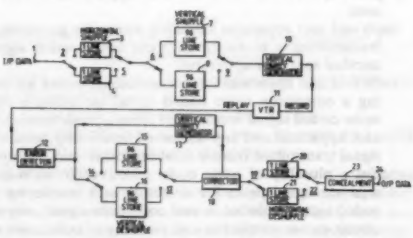
John G. S. Ive, London, England, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,713

Claims priority, application United Kingdom, Mar. 11, 1981, 8107602

Int. Cl.³ G06F 7/22

U.S. Cl. 371—2 **11 Claims**



1. A method of shuffling a block of data formed of data words, comprising the steps of

receiving said block of data as a first sequence of data words, each data word having an original address representing

the one of a plurality of original lines of data words making up said block in which each said respective data word is located and also the position of each said respective data word in said respective original line, each of said original lines having a number associated therewith,

allocating to each said data word a new address by successively adding an identical number to the original line number of successive data words along each said original line while maintaining unchanged the position of said data word relative to other data words in the original line so that the address of said data word is changed from that representing said original line to that representing a new line, whereby said block of data is now made up of a plurality of new lines of data words; and

transmitting said block of data as a second sequence of data words having said new addresses.

4,470,143

SEMICONDUCTOR LASER HAVING AN ETCHED MIRROR AND A NARROW STRIPE WIDTH, WITH AN INTEGRATED PHOTODETECTOR

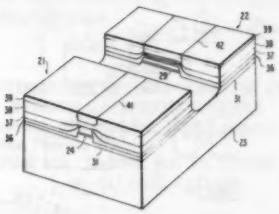
Mitsuhiro Kitamura; Kohroh Kobayashi, and Shigetoki Sugimoto, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1982, Ser. No. 408,302

Claims priority, application Japan, Aug. 18, 1981, 56-129057; Oct. 29, 1981, 56-174323; Nov. 9, 1981, 56-179303; Nov. 12, 1981, 56-181618; Nov. 13, 1981, 56-181853

Int. Cl.³ H01S 3/19

U.S. Cl. 372—50 **14 Claims**



1. An integrated optical semiconductor device comprising a stripe geometry heterojunction laser diode which is integrated with a photodetector on a semiconductor substrate and separated from said photodetector by an etched groove defining first and second etched surfaces, said laser diode having said first etched surface as one of a pair of mirror surfaces and comprising a stripe region which is bounded by a pair of heterojunctions, has a light emitting end on said first etched surface and a stripe axis, and is made of a semiconductor material having a first band gap, said photodetector having said second etched surface and comprising a carrier generating region which is bounded by a pair of heterojunctions disposed parallel to the heterojunctions of said stripe region, has a light receiving end on said second etched surface and a region axis substantially coaxially of said stripe axis, and is made of a semiconductor material having a second band gap, wherein said second band gap is not wider than said first band gap, said light receiving end having a wider area than said light emitting end.

4,470,144

COAXIAL-TYPE CARBON DIOXIDE GAS LASER OSCILLATOR

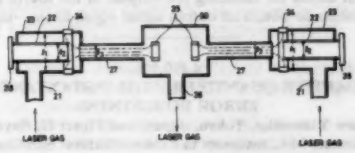
Reiji Sano, Kawasaki; Yasuyuki Morita, Yokohama; Yoshikazu Kawauchi, Kawasaki; Minoru Kimura, and Hideni Takahashi, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed May 18, 1982, Ser. No. 379,505

Claims priority, application Japan, May 18, 1982, 56-75215

Int. Cl.³ H01S 3/03

U.S. Cl. 372—61 **15 Claims**



1. A coaxial-type carbon dioxide gas laser oscillator, including;

a discharge tube having an axis substantially aligned with an optical axis of the laser oscillator;

a gas inlet disposed at one end of said discharge tube introducing gas into said discharge tube;

a gas outlet disposed at the other end of said discharge tube drawing the gas out of said discharge tube;

a gas supply chamber connected to and between said discharge tube and said gas inlet;

a pair of annular electrodes disposed at opposite ends of said discharge tube and generating an electrical discharge in the gas in said discharge tube;

means mounted in said gas supply chamber coaxially with said discharge tube for orientating the gas fed from said gas inlet via said gas supply chamber toward said discharge tube;

said means having an outer wall surface and said gas supply chamber having an inner wall surface, said outer and inner wall surfaces jointly defining a gap for passage therethrough of the gas from said gas inlet, said gas supply chamber including a space having a larger cross-sectional area than that of said gap allowing the gas to flow from said gap through said space into said discharge tube; and

said discharge tube having an inside cross-sectional area smaller than an outside cross-sectional area of said means and larger than said cross-sectional area of said gap.

4,470,145

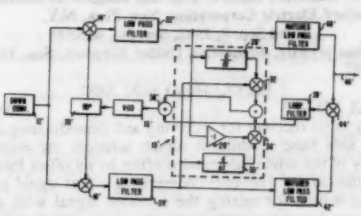
SINGLE SIDEBAND QUADRICORRELATOR

Austin M. Williams, Diamond Bar, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 26, 1982, Ser. No. 401,682

Int. Cl.³ H03D 1/24

U.S. Cl. 375—1 **3 Claims**



1. A single sideband quadricorrelator frequency difference detector for facilitating the acquisition and tracking of the center frequency ω_f of a spread spectrum, suppressed-carrier,

bi-phase modulated phase shift keyed input signal of the form $m(t)\sin \omega_0 t$ including:

first means for providing first and second in-phase and quadrature signals, respectively, of the form $\sin(\omega_I-\omega_0)t$ and $\cos(\omega_I-\omega_0)t$, respectively;

second means for differentiating said first and second signals;

third means for phase shifting the first signal by 180°;

fourth means for multiplying the differentiated first signal by the second signal to obtain a third signal;

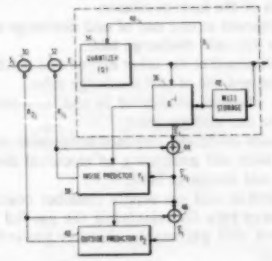
fifth means for multiplying the phase shifted first signal by the differentiated second signal to obtain a fourth signal; and

sixth means for summing the outputs of the fourth and fifth means to obtain an output signal equal to $(\omega_I-\omega_0)$.

4,470,146
ADAPTIVE QUANTIZER WITH INSTANTANEOUS ERROR ROBUSTNESS

Yohtaro Yatsuzuka, Tokyo, Japan, and Henri G. Suyderhoud, Potomac, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Apr. 30, 1982, Ser. No. 373,549
Int. Cl.³ H03K *13/22*
U.S. Cl. 375—30 **14 Claims**



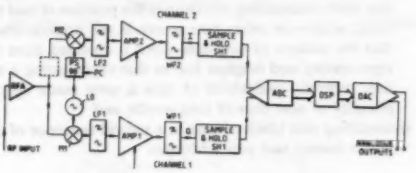
1. An adaptive quantizer of the type receiving input signal samples and quantizing said samples in accordance with a plurality of quantizing steps, and wherein said adaptive quantizer includes means for varying the size of said quantizing steps in accordance with an adaptation algorithm, the improvement characterized in that said means for varying said quantizing step sizes comprises varying means for varying said quantizing step sizes in accordance with a plurality of preceding quantizer outputs and wherein said varying means provides at least a small leakage in its step size variation at all times and a larger leakage in its step size variation in response to the occurrence of an error in the quantizer output.

4,470,147
RADIO RECEIVER WITH QUADRATURE DEMODULATION AND DIGITAL PROCESSING

John K. Goatcher, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 8, 1982, Ser. No. 415,968
Claims priority, application United Kingdom, Sep. 15, 1981, 8127797
Int. Cl.³ H03D *3/00, 5/00*
U.S. Cl. 375—77 **6 Claims**

1. A radio receiver for receiving and demodulating at least single side band modulated signals wherein the center frequency of the single side band is offset by an offset frequency from the carrier frequency, comprising a first signal path including means for mixing the received signal with a local oscillator frequency running at the main transmission frequency which is the center frequency of the side band for the ssbm signals to obtain a fixed mixed signal and means for filtering said first mixed signal to give a first filtered signal defined as an inphase signal, a second signal path including means for mixing the received RF signal with the local oscillator frequency but with a relative phase shift to obtain a second mixed signal and means for filtering said second mixed signal to provide a second filtered signal defined as a quadrature signal Q, an analogue to digital converter stage to convert the I and Q signals into respective digitised I and Q signals, and a digital signal processor arranged to demodulate the digitised I and Q

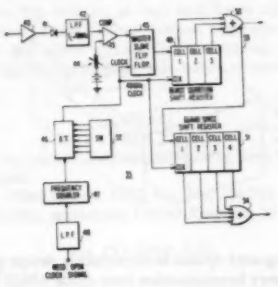


signals, including means to derive amplitude and phase of the original modulation from the digitised I and Q signals, means to subtract or add phase at the offset frequency to the phase angle θ to provide a new phase angle ϕ and means to derive R Sin ϕ or R Cos ϕ to produce digitised single side band demodulation signals for upper or lower single side band modulation depending respectively on whether the phase at the offset frequency is subtracted or added.

4,470,148
SATELLITE-RECEIVER TIME DIVISION MULTIPLE-ACCESS BURST DURATION AND GUARD SPACE MONITOR

Richard C. Mott, Gaithersburg; Robert T. Kroll, Jr., Middletown, and Tsvi F. Assal, Bethesda, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Oct. 30, 1981, Ser. No. 316,716
Int. Cl.³ H04L *7/00*
U.S. Cl. 375—113 **7 Claims**



1. A burst duration and guard space signal generator circuit for use in TDMA telecommunications systems comprising:

means for sampling a received detected QPSK envelope signal at a rate greater than a symbol rate of said envelope signal;

burst duration signal producing means operating in response to a first predetermined number of successive samples of said detected envelope signal for outputting said burst duration signal in an active state when at least one of said first predetermined number of samples of said detected envelope signals are in a first logic state;

guard space signal producing means operating in response to said burst duration signal producing means for outputting said guard space signal in an active state if and only if said burst duration signal has been in an inactive state for a predetermined second number of samples;

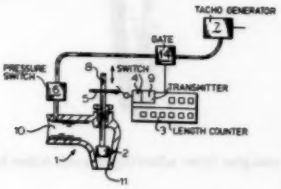
and wherein said burst duration signal generating means comprises first shift register means having at least two bit outputs and receiving an output from said sampling means and a first OR gate having inputs coupled to each of said bit outputs of said first shift register means, said burst duration signal being generated at an output of said first OR gate.

4,470,149

DEVICE FOR MEASURING THE LENGTH OF ROAD MARKING LINES

Frank Hofmann, Hamburg, Fed. Rep. of Germany, assignor to Walter Hofmann Maschinenfabrik, Rellingen, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,081
Int. Cl.³ G06M 3/02
U.S. Cl. 377—2 8 Claims



1. A device for counting or measuring the length of road marking lines or for a total counting of road marking line segments on roads, comprising:

application means for making road marking lines including a spray gun having a movable closing element for activating and deactivating said spray gun and an activation means directly operable by said closing element; and

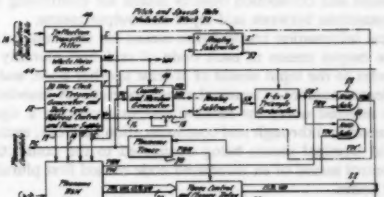
at least one counter for monitoring the application of road markings on a road, said counter having switch-on and switch-off means activated by said activation means of said application means.

4,470,150

VOICE SYNTHESIZER WITH AUTOMATIC PITCH AND SPEECH RATE MODULATION

Carl L. Ostrowski, Mt. Clemens, Mich., assignor to Federal Screw Works, Detroit, Mich.

Filed Mar. 18, 1982, Ser. No. 359,595
Int. Cl.³ G10L 1/00
U.S. Cl. 381—52 12 Claims



1. An improved electronic voice synthesizer of the type having

input circuit means responsive to input data identifying a sequence of phonemes for generating control and excitation signals that electronically define each phoneme in the sequence; and

vocal tract circuit means responsive to said control and excitation signals for substantially producing the frequency spectrum of each phoneme in the sequence; wherein the improvement comprises:

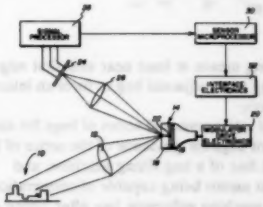
means for automatically varying the pitch and timing of the phonemes independently of the input data to produce variations in the pitch and rate of the synthesized speech, wherein a change in the pitch of a given phoneme is accomplished by an inversely proportional change in the timing of that phoneme.

4,470,151

IMAGE MOTION AND DISTORTION STABILIZATION FOR PREDETECTION SCENE INFORMATION PROCESSING SENSORS

James D. Billingsley, Arlington, and Donald T. Cottingham, Dallas, both of Tex., assignors to The LTV Aerospace and Defense Co., Dallas, Tex.

Filed Aug. 24, 1981, Ser. No. 295,925
Int. Cl.³ H01J 31/50; G06K 9/32
U.S. Cl. 382—44 22 Claims



1. A method for stabilizing images in a computer reference frame for a telescope moving relative to a scene, comprising the steps of:

(a) sampling radiance values of the scene reflected from spots written on a thermoptic modulator for a selected set of points having fixed coordinates in the reference frame;

(b) processing information about the reference frame coordinates of the points in step (a), the radiance values obtained in step (a) and stored radiance values obtained from a preceding set of observations to obtain transform data representing motion of the image from the scene caused by the relative motion of the telescope to the scene;

(c) selecting a set of points having the same coordinates in the reference frame as the set in step (a) to obtain the next set of radiance values;

(d) transforming coordinates of the points selected in step (c) to modulator coordinates from the transform data obtained in step (b); and

(e) writing reflective spots on a thermoptic modulator at the modulator coordinates obtained in step (d) to acquire a new set of radiance values.

4,470,152

VALVE BAG WITH ALIGNMENT MEANS

Bernard F. Blankenship, Bay Village, Ohio, assignor to Basic Packaging Systems, Inc., Avon Lake, Ohio

Filed Jun. 14, 1982, Ser. No. 387,758
Int. Cl.³ B65D 30/24
U.S. Cl. 383—37 16 Claims

1. An interconnected series of valve bags for cooperation with a reference line in a bag filling machine comprising, in combination, a first wall and a second wall connected together near all edges to form a substantially closed bag;

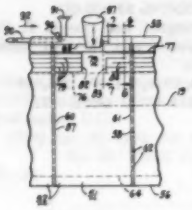
said first wall being formed from first and second panels partially overlapping each other;

at least one panel seal sealing between said first and second panels at the overlapping areas thereof with said panel seal terminating near a first valve side line transverse to a first edge of said bag;

a second valve side line spaced from said first line and transverse to said first edge and including a seal between said first and second panels at the overlapping areas thereof;

a valve being defined between said two valve side lines and the unsealed portions therebetween of said overlapping first and second panels;

the interior end of said valve being defined by a portion of said first panel and said valve having an openable exterior end defined by a portion of said second panel, the overlapping of said first and second panels defining a self-closing valve after filling the bag with the desired contents;



interconnecting means at least near said first edge connecting each bag to an adjacent bag to form an interconnected series of bags;

means on said interconnected series of bags for alignment of said series of bags for guidance of the series of bags along a reference line of a bag filling machine; and

said alignment means being capable of cooperation with the bag filling machine reference line after filling of the bag with the desired contents.

4,470,153

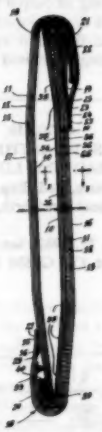
MULTIWALL POUCH BAG WITH VENT STRIP

Ralph H. Kenan, Pensacola, Fla., assignor to St. Regis Paper Company, West Nyack, N.Y.

Filed Mar. 8, 1982, Ser. No. 366,548

Int. Cl.³ B65D *33/01*

U.S. Cl. 383—100 **12 Claims**

1. A bag formed from a sealed plastic tube having a longitudinal seam comprising overlapping tube margins sealed together by two spaced seals providing a channel, said channel extending across at least one sealed end of said bag, one of the tube margins being formed with openings providing communication between the interior of the tube and the channel to permit escape of air from the tube, and a papery spacer strip disposed along the length of the channel preventing the over-

lapping tube margins from adhering to each other between the spaced seals.

4,470,154

OPTICAL COMMUNICATION NETWORK

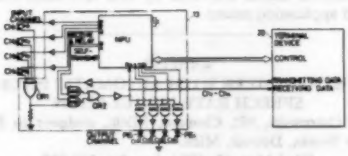
Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 17, 1981, Ser. No. 331,678

Claims priority, application Japan, Dec. 19, 1980, 55-179981

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—607 **22 Claims**



1. An optical communication network comprising:

a first plurality of nodes, each including input means, output means and connection control means for controlling the connection between said input and output means;

optical information transmission means for interconnecting the output means of each node of said first plurality of nodes to the input means of at least another node; and

a selected number of terminal means (operatively associated to selected ones) for sending and/or receiving a signal transmitted through said communication network, each of said terminal means being connected to the connection control means of an associated node of said first plurality of nodes.

DESIGN PATENTS

GRANTED SEP. 4, 1984

ERRATA

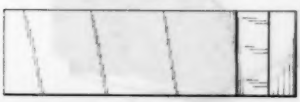
For CLASS	See PATENT NO.
D08–373	275,347

DESIGNS

SEPTEMBER 4, 1984

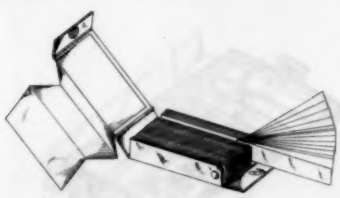
275,334
HARD HAT WITH SOLAR-POWERED COOLING MEANS
Fred L. Pullis, P.O. Box 787, Twentynine Palms, Calif. 92277
Filed Jun. 28, 1982, Ser. No. 392,947
Term of patent 14 years
U.S. Cl. D2—231

275,335
FOOT SUPPORT FOR A LINEMAN'S CLIMBING HOOK
John D. Garrison, 201 NW. 120 St., Oklahoma City, Okla. 73114
Filed Jan. 18, 1982, Ser. No. 340,456
Term of patent 14 years
U.S. Cl. D2—314



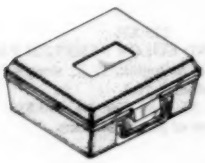
275,336
SHOELACE KNOT RETAINER OR SIMILAR ARTICLE
Charles W. Herdman, 1253 Stirling Rd., Dania, Fla. 33004
Filed May 11, 1982, Ser. No. 377,562
Term of patent 14 years
U.S. Cl. D2—316

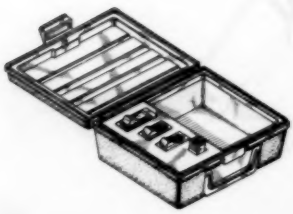
275,337
VENETIAN BLIND COLOR SAMPLER PACKET
Jasmina Forcan, North Arlington, N.J., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.
Filed Jun. 30, 1982, Ser. No. 393,815
Term of patent 14 years
U.S. Cl. D3—30.1



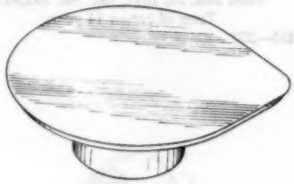
275,338
FISHING REEL PROTECTIVE CASE
Larry A. Bailey, 895 Clara, Palo Alto, Calif. 94303
Filed Jul. 30, 1982, Ser. No. 403,941
Term of patent 14 years
U.S. Cl. D3—38

275,339
TESTER CASE
Eugene T. McKinnon, P.O. Box 1630, Santa Monica, Calif. 90406
Filed Jun. 15, 1982, Ser. No. 388,707
Term of patent 14 years
U.S. Cl. D3—72





275,340
TABLE OR SIMILAR ARTICLE
Jack G. Dunbar, New York, N.Y., assignor to Dunbar Furniture, Inc., Berne, Ind.
Filed Jun. 1, 1982, Ser. No. 383,413
Term of patent 14 years
U.S. Cl. D6—483



275,341
CHAIR OR SIMILAR ARTICLE
Jack G. Dunbar, New York, N.Y., and Steven Brooks, Greenwich, Conn., assignors to Dunbar Furniture, Inc., Berne, Ind.
Filed Jun. 21, 1982, Ser. No. 390,089
Term of patent 14 years
U.S. Cl. D6—366

275,342
CHAIR
Lee H. Fister, Jr., Centerville, Ohio, assignor to August Incorporated, Centerville, Ohio
Continuation of Ser. No. 21,709, Mar. 19, 1979,. This application Feb. 25, 1982, Ser. No. 352,165
Term of patent 14 years
U.S. Cl. D6—364

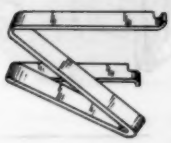
275,343
CHAIR
Mike T. Claman, 475 Park Ave., New York, N.Y. 10022
Filed Dec. 24, 1981, Ser. No. 334,454
The portion of the term of this patent subsequent to Jul. 31, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—369

275,344
CHAIR
Andre Jarry, 10,140 Curotte St., Montreal, Quebec, Canada (H2C 2Y6)
Filed Jan. 29, 1982, Ser. No. 343,884
Term of patent 14 years
U.S. Cl. D6—372

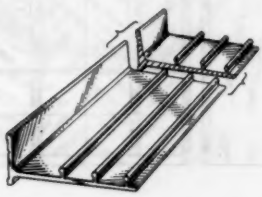
275,345
DISPENSER FOR ROLLS OF PAPER
William H. Hall, Kooyong, Australia, assignor to Bowater-Scott Limited, Victoria, Australia
Filed Aug. 3, 1981, Ser. No. 289,119
Claims priority, application Australia, Feb. 13, 1981, 83321
Term of patent 14 years
U.S. Cl. D6—518

275,346
GUN RACK
John B. Padgett, Box 91, Stockton, Ala. 36579
Filed Nov. 2, 1981, Ser. No. 317,526
Term of patent 14 years
U.S. Cl. D6—552

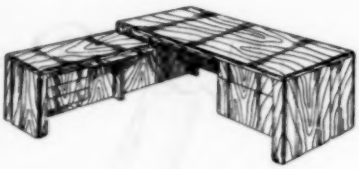
275,347
TOOL HOLDER
Sten J. Brorsson, Kristianstadvägen 23,, S-242 00 Hörby, Sweden
Filed Jan. 21, 1982, Ser. No. 341,221
Claims priority, application Sweden, Jul. 27, 1981, 811626
Term of patent 14 years
U.S. Cl. D8—373



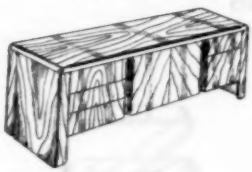
275,348
SHELF FOR DISPLAYING MODEL TRAIN
George E. Olson, 644 37th Ave., Santa Cruz, Calif. 95062
Filed May 13, 1982, Ser. No. 377,618
Term of patent 14 years
U.S. Cl. D6—574



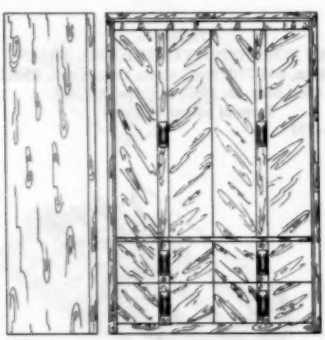
275,349
COMBINED SECRETARIAL DESK AND RETURN
Richard Thompson, 9060 Spargur Loop Rd., Bainbridge, Wash. 98110
Filed Feb. 24, 1981, Ser. No. 237,293
Term of patent 14 years
U.S. Cl. D6—426



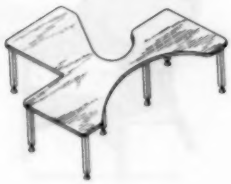
275,350
CREDENZA
Richard Thompson, 9060 Spargur Loop Rd., Bainbridge, Wash. 98110
Filed Feb. 24, 1981, Ser. No. 237,294
Term of patent 14 years
U.S. Cl. D6—446



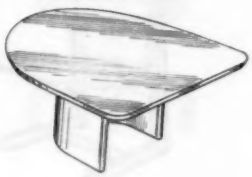
275,351
DOOR CHEST
Haywood L. West, P.O. Box 5024, High Point, N.C. 27262
Filed Dec. 16, 1981, Ser. No. 331,323
Term of patent 14 years
U.S. Cl. D6—446



275,352
DESK
John W. Foyle, St. Nicholas House, 55 Stambridge Rd., Rochford, Essex SS4 1DY, United Kingdom
Filed Sep. 25, 1981, Ser. No. 305,504
Claims priority, application United Kingdom, Apr. 7, 1981, 999830
Term of patent 14 years
U.S. Cl. D6—482



275,353
DESK OR SIMILAR ARTICLE
Jack G. Dunbar, New York, N.Y., assignor to Dunbar Furniture, Inc., Berne, Ind.
Filed Jun. 1, 1982, Ser. No. 383,417
Term of patent 14 years
U.S. Cl. D6—483



275,354
SEAT CUSHION
Jose Kaganas, Miami, Fla., assignor to Sheepskin Autoseat Corporation, Hialeah Gardens, Fla.
Filed Mar. 12, 1982, Ser. No. 357,401
Term of patent 14 years
U.S. Cl. D6—502

275,355

SERVING BOWL OR SIMILAR ARTICLE

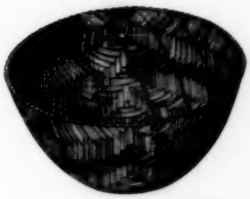
Philippe J. Durand, Les Daneaux, Chemin de la Garenne, 62510 Arques, France

Filed Jun. 10, 1982, Ser. No. 387,002

Claims priority, application Hague, May 24, 1982, DM/001481

Term of patent 14 years

U.S. Cl. D7—28



275,356

BOWL OR SIMILAR ARTICLE

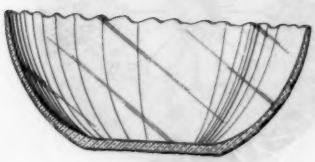
Philippe J. Durand, Les Daneaux, Chemin de la Garenne, 62510 Arques, France

Filed Jun. 29, 1982, Ser. No. 393,451

Claims priority, application Hague, May 24, 1982, DM/001481

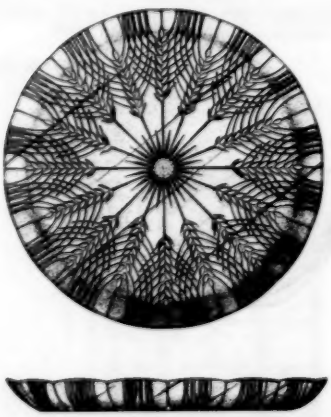
Term of patent 14 years

U.S. Cl. D7—28



275,357
PLATE OR SIMILAR ARTICLE
Philippe J. Durand, Les Daneaux, Chemin de la Garenne, 62510 Arques, France
Filed Jul. 1, 1982, Ser. No. 394,335
Claims priority, application Hagne, May 24, 1982, DM/001481
Term of patent 14 years
U.S. Cl. D7—28

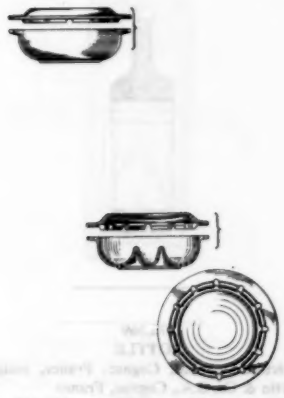
275,358
PLATE OR SIMILAR ARTICLE
Philippe J. Durand, Les Daneaux, Chemin de la Garenne, 62510 Arques, France
Filed Jul. 1, 1982, Ser. No. 394,336
Claims priority, application Hagne, May 24, 1982, DM/001481
Term of patent 14 years
U.S. Cl. D7—28



275,359
PASTRY SHELL SHAPER
Carmella Yacobucci, 417 E. Third Ave., Derry, Pa. 15627
Filed Jan. 13, 1982, Ser. No. 313,305
Term of patent 14 years
U.S. Cl. D7—99

275,360
HAND KNIFE WITH BLADE GUARD
Francis W. Child, Southfork - Star Rte., Cody, Wyo. 82414
Filed May 24, 1982, Ser. No. 381,037
Term of patent 14 years
U.S. Cl. D7—151

275,361
OMELETTE PAN
George Manos, 1642 Greenfield Dr., El Cajon, Calif. 92021
Filed Mar. 24, 1982, Ser. No. 361,321
Term of patent 14 years
U.S. Cl. D7—357



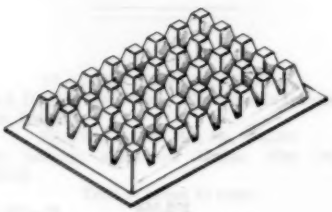
275,362
GARDENING SHEAR
Tsuneo Ishida, 7-15, Fukui, 3-chome, Miki-city, Hyogo, and Kimikazu Ishida, 1270-73, Shukuhara, Miki-city, Hyogo, both of Japan
Filed Nov. 10, 1982, Ser. No. 440,735
Claims priority, application Japan, Aug. 9, 1982, 57-36189
Term of patent 14 years
U.S. Cl. D8—5

275,363
GARDENING SHEAR
Tsuneo Ishida, 7-15, Fukui 3-chome, Miki-city, Hyogo, and Kimikazu Ishida, 1270-73, Shukuhara, Miki-city, Hyogo, both of Japan
Filed Nov. 10, 1982, Ser. No. 440,736
Claims priority, application Japan, Aug. 9, 1982, 57-36187
Term of patent 14 years
U.S. Cl. D8—5

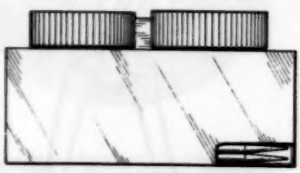
275,364
GARDENING SHEAR
Tsuneo Ishida, 7-15, Fukui 3-chome, Miki-city, Hyogo, and Kimikazu Ishida, 1270-73, Shukuhara, Miki-city, Hyogo, both of Japan
Filed Nov. 10, 1982, Ser. No. 440,737
Claims priority, application Japan, Aug. 9, 1982, 57-36190
Term of patent 14 years
U.S. Cl. D8—5

275,365
POLY-V PULLEY
Yukio Kanemitsu, Kobe, Japan, assignor to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho, Japan
Filed Jun. 8, 1982, Ser. No. 386,324
Claims priority, application Japan, Dec. 16, 1981, 56-55940
The portion of the term of this patent subsequent to Jan. 11, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—360

275,366
PACKAGING CONTAINER FOR FROZEN AQUARIUM FOODS
Robert A. Maxwell, Box 53, Spring City Rd., R.D. #3, Phoenixville, Pa. 19460
Filed Jan. 18, 1982, Ser. No. 340,317
Term of patent 14 years
U.S. Cl. D9—341



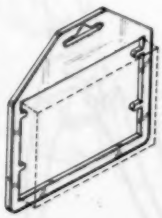
275,367
COMBINED SHIPPING AND STORAGE CONTAINER FOR DENTAL MATERIALS OR THE LIKE
Robert D. Holewinski, Lakehurst, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Jan. 18, 1982, Ser. No. 340,563
Term of patent 14 years
U.S. Cl. D9—369



275,368
BOTTLE
Henri M. du Chambon, Brignoud, France, assignor to Teisseire France S.A., Grenoble, France
Filed Jul. 27, 1981, Ser. No. 286,860
Claims priority, application France, Jan. 27, 1981, 810251
Term of patent 14 years
U.S. Cl. D9—370

275,369
BOTTLE
André J. Hériard-Dubreuil, Cognac, France, assignor to E. Remy Martin & Co. S.A., Cognac, France
Filed Jan. 15, 1982, Ser. No. 339,493
Claims priority, application France, Jul. 17, 1981, 812524
Term of patent 14 years
U.S. Cl. D9—406

275,370
CASSETTE BOX DISPLAY HOLDER
William A. Smyth, Fullerton; Graydon S. Carlson, Orange, and Harold J. Wilde, Fullerton, all of Calif., assignors to Certron Corporation, Anaheim, Calif.
Filed Feb. 5, 1982, Ser. No. 346,090
Term of patent 14 years
U.S. Cl. D9—415

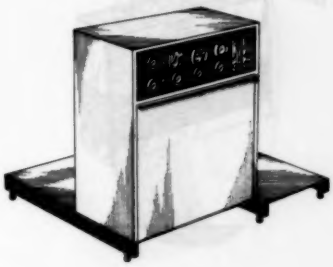


275,371
DISPLAY PACKAGE
Brent M. Siegel, Chicago, Ill., assignor to Bryn Mawr Smokers Sundries, Inc., Chicago, Ill.
Filed Apr. 12, 1982, Ser. No. 367,178
Term of patent 14 years
U.S. Cl. D9—415

275,372
BAG RESEALING CLAMP OR SIMILAR ARTICLE
Ira Price, 28199 Fairmount Blvd., and Anthony J. Gilberto, 30529 Summit La., both of, Pepper Pike, Ohio 44124
Filed May 4, 1981, Ser. No. 260,404
Term of patent 14 years
U.S. Cl. D9—434

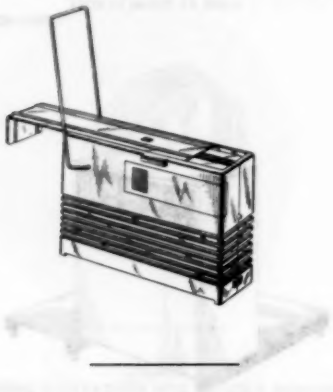
275,373
END CLOSURE FOR A CONTAINER
Omar L. Brown, and Jack L. Kalter, both of Kettering, Ohio, assignors to Ermal C. Fraze, Dayton, Ohio
Filed Jan. 7, 1982, Ser. No. 337,537
Term of patent 14 years
U.S. Cl. D9—438

275,374
FLUID FLOW MONITOR FOR ION EXCHANGE UNIT THAT REGENERATES PHOTOGRAPHIC DEVELOPERS
Brian C. Barbo, Avon; Richard L. Klein, Rochester; Robert M. Kabute, Honeoye Falls, and Thomas N. Hendrickson, Perry, all of N.Y., assignors to CPAC, Inc., Leicester, N.Y.
Filed Feb. 22, 1982, Ser. No. 351,165
Term of patent 14 years
U.S. Cl. D10—96



275,375
PORTABLE SECURITY ALARM
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 19, 1982, Ser. No. 369,695
Term of patent 14 years
U.S. Cl. D10—106

275,376
BURGLAR AND SMOKE TRAVEL ALARM
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Apr. 19, 1982, Ser. No. 369,728
Term of patent 14 years
U.S. Cl. D10—106

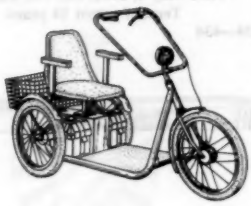


275,377
PASSENGER RAIL VEHICLE
Jerome A. Lutz, 204 ½W. Jefferson, Anna, Ill. 62906
Filed Jan. 6, 1982, Ser. No. 337,318
Term of patent 14 years
U.S. Cl. D12—40

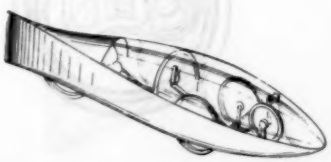
275,378
ARTICULATED RAILWAY HOPPER CAR
Michael J. Pavlick, Norristown, Pa., assignor to The Budd Company, Troy, Mich.
Filed Nov. 24, 1980, Ser. No. 209,546
Term of patent 14 years
U.S. Cl. D12—41

275,379
MOBILE CARRIER FOR CHAIR
Thomas C. Wenzel, Greenlawn, N.Y., assignor to Wenzelite Corporation, Huntington Station, N.Y.
Filed Mar. 12, 1982, Ser. No. 357,830
Term of patent 14 years
U.S. Cl. D12—85

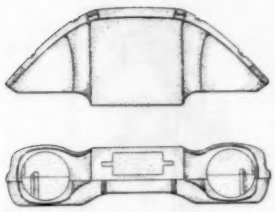
275,380
THREE-WHEELED VEHICLE
Francis W. Flowers, Sr., 591 Mantua Blvd., Sewell, N.J. 08080
Filed May 19, 1982, Ser. No. 379,786
Term of patent 14 years
U.S. Cl. D12—85



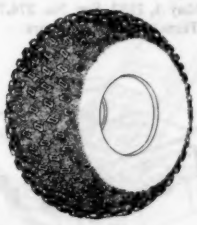
275,381
HUMAN POWERED VEHICLE
Fred D. Fernandes, La Verne; John M. Speicher, Upland; Douglas W. Unkrey, and Allan A. Voigt, both of Anaheim, all of Calif., assignors to Versatron Research Corporation, Healdsburg, Calif.
Filed Apr. 30, 1981, Ser. No. 258,940
Term of patent 14 years
U.S. Cl. D12—107



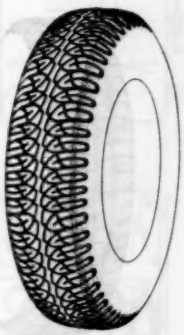
275,382
MOTORCYCLE RADIO HOUSING
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163
Filed Aug. 24, 1981, Ser. No. 295,761
Term of patent 14 years
U.S. Cl. D12—114



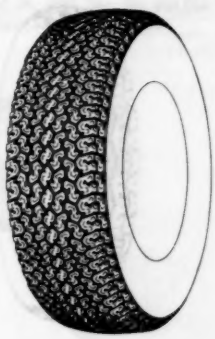
275,383
TIRE
James C. Stroble, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 27, 1982, Ser. No. 453,085
Term of patent 14 years
U.S. Cl. D12—136



275,384
TIRE
Jean F. L. Fontaine, Bürden, Luxembourg, and Maurice Graas, Schockville, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 17, 1982, Ser. No. 358,942
Term of patent 14 years
U.S. Cl. D12—146

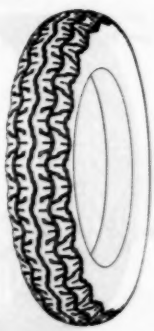


275,385
TIRE
Daniel J. Lindner, Canal Fulton, Ohio, and Harold D. Fetty, Birmingham, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 15, 1982, Ser. No. 357,546
Term of patent 14 years
U.S. Cl. D12—146

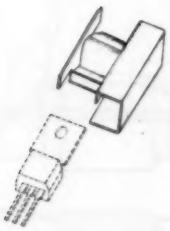


275,386
TIRE
André E. J. Baus, Bettembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 19, 1982, Ser. No. 399,527
Term of patent 14 years
U.S. Cl. D12—146

275,387
TIRE
Harold D. Fetty, Birmingham, Mich., and David E. Smith, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 30, 1982, Ser. No. 413,207
Term of patent 14 years
U.S. Cl. D12—147

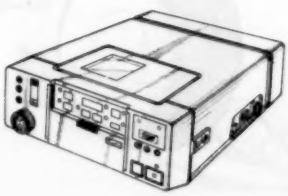


275,388
UNSYMMETRICAL HEAT SINK FOR ELECTRONIC DEVICES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Sep. 30, 1982, Ser. No. 430,275
Term of patent 14 years
U.S. Cl. D13—23



275,389
VIDEO CASSETTE RECORDER
Mitsuo Takanaga, Kyoto; Kazuhiko Nagata; Shinji Makino, both of Nara, and Yoshihisa Takaichi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 26, 1982, Ser. No. 352,971
Claims priority, application Japan, Sep. 3, 1981, 56-39055
Term of patent 14 years
U.S. Cl. D14—6

275,390
VIDEO TAPE RECORDER
Masamitsu Shibata, Matsudo, and Hiroshi Yamamoto, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed May 4, 1982, Ser. No. 374,762
Term of patent 14 years
U.S. Cl. D14—2



275,391

COMBINED TAPE RECORDER AND RADIO RECEIVER

Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 22, 1982, Ser. No. 370,744

Claims priority, application Japan, Oct. 26, 1981, 56-47635

Term of patent 14 years

U.S. Cl. D14—5

275,392

TELEPHONE INSTRUMENT

Carl-Arne Breger, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 10, 1981, Ser. No. 291,471

Claims priority, application Sweden, Feb. 17, 1981, 81-0390

Term of patent 14 years

U.S. Cl. D14—53

275,393

SOUND POWER TELEPHONE

Frank A. Grande, Alpine, N.J., assignor to Hose-McCann Telephone Co. Inc., Englewood, N.J.

Filed Sep. 11, 1981, Ser. No. 301,441

Term of patent 14 years

U.S. Cl. D14—56

275,394

OUTBOARD MOTOR

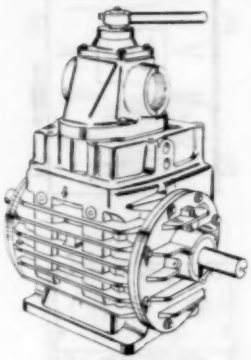
Arthur R. Ferguson, Northbrook, Ill., and Myron T. Stevens, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 30, 1982, Ser. No. 403,564

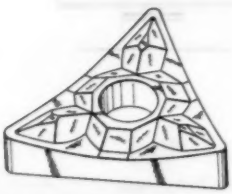
Term of patent 14 years

U.S. Cl. D15—4

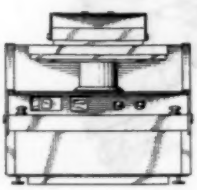
275,395
VALVED AIR PUMP
Gordon H. Boswell, Auckland, New Zealand, assignor to Mason & Porter Limited, Mt. Wellington, New Zealand
Filed Jun. 30, 1980, Ser. No. 163,998
Term of patent 14 years
U.S. Cl. D15—9



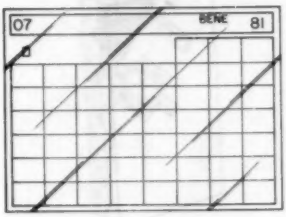
275,396
CUTTING INSERT FOR TOOL HOLDER
Reuven Porat, Nahariya, and David Tzola, Kiryat Motzkin, both of Israel, assignors to ISCAR Ltd., Nahariya, Israel
Filed Aug. 10, 1982, Ser. No. 406,799
Claims priority, application Israel, Feb. 11, 1982, 8909
Term of patent 14 years
U.S. Cl. D15—139



275,397
APPARATUS FOR WELDING TEXTILE GOODS BY HEAT
Mototsugu Matsuo, 4-36, 2-chome, Nakazakinishi, Kitaku, Osaka-shi, Japan
Filed Dec. 28, 1981, Ser. No. 335,277
Term of patent 14 years
U.S. Cl. D15—144

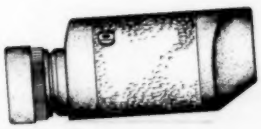


275,398
MICROFICHE
Hubert F. Gevers, 38 Lange Lozanastraat, Antwerpen, Belgium
Filed Apr. 6, 1982, Ser. No. 365,904
Claims priority, application Belgium, Oct. 7, 1981, 025910106
Term of patent 14 years
U.S. Cl. D16—26

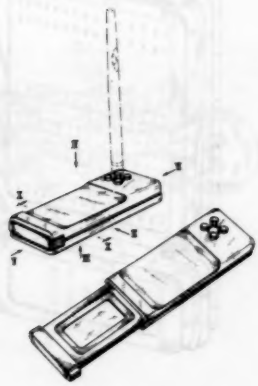


275,399
PAIR OF SUNGLASSES OR THE LIKE
Trudy H. Zancaner, Treviso, Italy, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Mar. 18, 1982, Ser. No. 359,384
Term of patent 14 years
U.S. Cl. D16—102

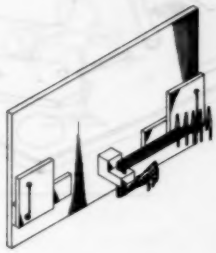
275,400
BINOCULAR
Claus O. Huckenbeck, Bear Valley, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jun. 9, 1983, Ser. No. 502,680
Term of patent 14 years
U.S. Cl. D16—133



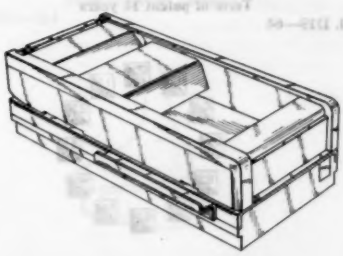
275,401
COMBINED MAGNIFIER AND PEN HOLDER
Walter Henkels, D-5142 Hückelhoven, Holunderweg 1, Fed. Rep. of Germany
Filed Jul. 15, 1982, Ser. No. 398,339
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, MR 141
Term of patent 14 years
U.S. Cl. D16—135



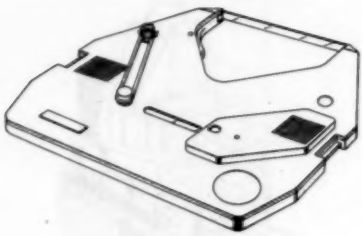
275,402
MUSIC BOOK PAGE TURNER
Gerard T. O'Brien, 2162 Skyline Dr., Gainesville, Ga. 30501
Filed Oct. 9, 1981, Ser. No. 310,462
Term of patent 14 years
U.S. Cl. D17—99

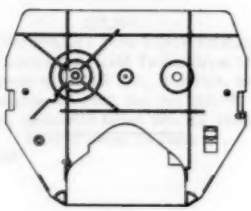


275,403
IMPRINTER
Keizo Kubo, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd.; Janome Computing Center and Janome Precision Industry Co. Ltd., all of Tokyo, Japan
Filed Aug. 19, 1981, Ser. No. 294,172
Claims priority, application Japan, Feb. 24, 1984, 59-6956
Term of patent 14 years
U.S. Cl. D18—14



275,404
PRINTING RIBBON CASSETTE
Masanori Hashimoto, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Jun. 16, 1982, Ser. No. 389,060
Claims priority, application Japan, Dec. 16, 1981, 56-55755
Term of patent 14 years
U.S. Cl. D18—22

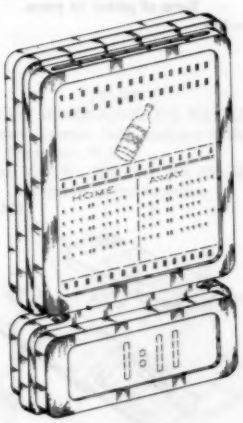




275,405
SET OF BLOCKS FOR A CHILDREN'S CLOCK
Dieter Wolf, Hattersheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany
Division of Ser. No. 189,544, Sep. 22, 1980,. This application Jan. 5, 1982, Ser. No. 337,192
Term of patent 14 years
U.S. Cl. D19—64

275,406
PENCIL HOLDER
David Battle, Yellow Springs, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio
Filed May 3, 1982, Ser. No. 374,048
Term of patent 14 years
U.S. Cl. D19—85

275,407
COMBINED CLOCK AND ADVERTISING DISPLAY
Albert E. Smith, 906 Monticello St., Greensboro, N.C. 27410
Filed Oct. 8, 1981, Ser. No. 309,859
Term of patent 14 years
U.S. Cl. D20—20



275,408
LOCKING LABEL-HOLDING HANGER DEVICE
Michael J. Maloney, 1839 Twin Lakes Rd., Rock Hill, S.C. 29730
Filed Feb. 22, 1982, Ser. No. 350,650
Term of patent 14 years
U.S. Cl. D20—43

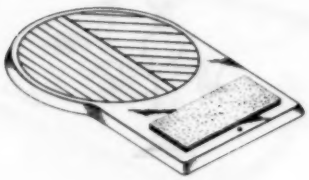
275,409
BALL GAME HOUSING
Howard J. Morrison, Deerfield; Steven F. Rehkemper, Chicago, both of Ill., and Jeffrey M. Chambers, Wilbraham, Mass., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 16, 1982, Ser. No. 348,736
Term of patent 14 years
U.S. Cl. D21—2

275,410
SPINNING SUCTION TOY
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Filed Jul. 8, 1982, Ser. No. 396,159
Term of patent 14 years
U.S. Cl. D21—92

275,411
PHYSICAL EXERCISER
Philip Silverston, Birkenhead, England, assignor to Executive Health Limited, Cheshire, England
Filed May 18, 1981, Ser. No. 264,631
Term of patent 14 years
U.S. Cl. D21—191

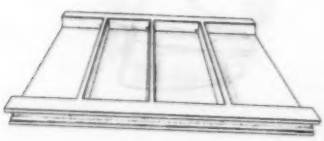
275,412
GOLF CLUB HEAD
Samuel P. Simmons, 1746 Abalone Ave., Torrance, Calif. 90501
Filed Aug. 9, 1982, Ser. No. 406,277
Term of patent 14 years
U.S. Cl. D21—214

275,413
GOLF DRIVING PLATFORM
James R. Shroads, 673 S. Vine, Denver, Colo. 80209, and Charles E. Easler, 2550 S. University Blvd., Denver, Colo. 80210
Filed Aug. 4, 1982, Ser. No. 403,480
Term of patent 14 years
U.S. Cl. D21—234

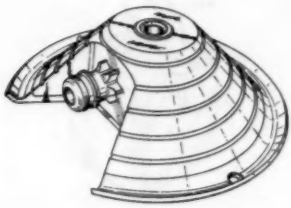


275,414
INSECT EXTERMINATOR
A. C. Tom Boyd, Knoxville, Tenn., assignor to Fi-Shock, Inc., Knoxville, Tenn.
Filed Aug. 30, 1982, Ser. No. 412,540
Term of patent 14 years
U.S. Cl. D22—19

275,415
ELEMENT FOR A MANURE CONTAINER
Claes Ahlqvist, Möllevägen 11, S-282 00 Tryinge, and Christer Olsén, Örrvägen 3, S-360 51 Hovmantorp, both of Sweden
Filed Nov. 17, 1981, Ser. No. 322,309
Term of patent 14 years
U.S. Cl. D23—2

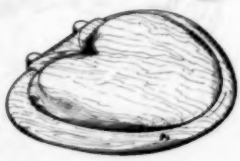


275,416
SPRINKLER
Franco Clivio, Ulm, and Dieter Raffler, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Gardena Kress + Kastner GmbH, Fed. Rep. of Germany
Filed Dec. 1, 1982, Ser. No. 445,901
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, GRA III 1034/82-03
Term of patent 14 years
U.S. Cl. D23—7



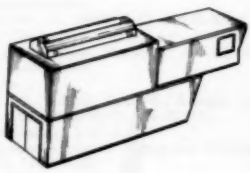
275,417
WATER CLOSET OR SIMILAR ARTICLE
Henry M. Stairs, Jr., Neshanic, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 11, 1983, Ser. No. 522,089
Term of patent 14 years
U.S. Cl. D23—65

275,418
COMBINED TOILET SEAT AND COVER
Lloyd W. Spiro, 20510 Napa St., Canoga Park, Calif. 91306
Filed Aug. 5, 1982, Ser. No. 405,701
Term of patent 14 years
U.S. Cl. D23—71

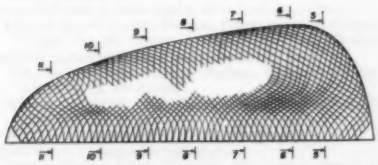


275,419
ELECTRIC ROOM HEATER
Rocco L. Church, Auburn, N.Y., assignor to Patco Energy, Inc., Auburn, N.Y.
Filed Jun. 4, 1982, Ser. No. 385,077
Term of patent 14 years
U.S. Cl. D23—120

275,420
CONCRETE SUPPLY STATION
Sture Boström, Umeå, Sweden, assignor to AB Röbäcks Mekaniska, Umeå, Sweden
Filed May 4, 1982, Ser. No. 374,628
Claims priority, application Sweden, Nov. 6, 1981, 81-2556
Term of patent 14 years
U.S. Cl. D25—3



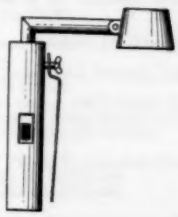
275,421
AIR-SUPPORTED STRUCTURE
Donato M. Fraioli, 884 Palmer Ave., Mamaroneck, N.Y. 10543
Filed Sep. 30, 1982, Ser. No. 431,698
Term of patent 14 years
U.S. Cl. D25—20



275,422
ROOFER'S SUPPORT CHAIR
Patric I. Dello Russo, 5814 NE. 63rd St., Kansas City, Mo. 64119
Filed Sep. 20, 1982, Ser. No. 419,714
Term of patent 14 years
U.S. Cl. D25—68

275,423
COMBINED AUTOMATIC EMERGENCY LIGHT AND AUDIBLE ALARM
Benjamin H. Stansbury, Jr., Beverly Hills, and Alan La Salle, Mar Vista, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 2, 1982, Ser. No. 345,186
Term of patent 14 years
U.S. Cl. D26—38

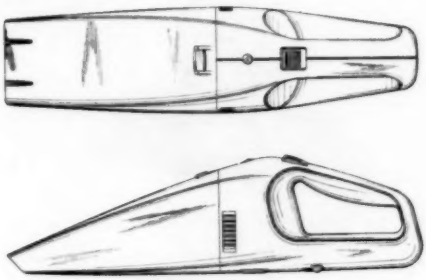
275,424
PORTABLE READING LAMP
Thomas G. Albano, 180 St. Andrews Pl., Clifton, N.J. 07012
Filed Aug. 13, 1981, Ser. No. 292,665
Term of patent 14 years
U.S. Cl. D26—60



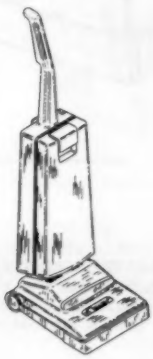
275,425
MAKEUP COMPACT
Beatrice I. E. Briggs, 403 Kansas Dr., Goshen, Ind. 46526
Filed Jun. 24, 1981, Ser. No. 277,143
Term of patent 14 years
U.S. Cl. D28—78

275,426
WASHER FOR INDUSTRIAL AND AUTOMOBILE PARTS
Leroy A. Edge, Humboldt, Iowa, assignor to The Hotsy Corporation, Englewood, Colo.
Filed Mar. 26, 1982, Ser. No. 362,090
Term of patent 14 years
U.S. Cl. D32—4

275,427
VACUUM CLEANER
Masahiro Kishi, Osaka, and Hiroshi Yajima, Hyogo both of Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Nov. 15, 1982, Ser. No. 441,680
Claims priority, application Japan, Nov. 30, 1981, 56-53185; France, Aug. 31, 1982, 822,954
Term of patent 14 years
U.S. Cl. D32—18



275,428
VACUUM CLEANER OR THE LIKE
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Apr. 22, 1982, Ser. No. 370,677
Term of patent 14 years
U.S. Cl. D32—22



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF SEPTEMBER, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Volvo: *See—*
Miller, Albert A., 4,468,987, Cl. 74-862.000.
Schlicker, Heinrich A., 4,469,333, Cl. 277-12.000.

Abbott, Phillip G., to Henley, Terry E. Child proof security device. 4,469,358, Cl. 292-288.000.

Abdel-Hehim, Hosam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., to Petroleo Brasileiro S.A. - Petrobras. Process for the partial solubilization of phosphate rock and obtaining acid and phosphate fertilizers therefrom. 4,469,504, Cl. 71-37.000.

Abe, Takashi; Baba, Hajime; Hayashi, Eiji; and Nagase, Shunji, to Agency of Industrial Science and Technology; and Ministry of International Trade & Industry. Trichloropolyfluoro-bicyclo ethers. 4,469,879, Cl. 549-465.000.

Abe, Tomohiko: *See—*
Ohno, Katsutoshi; Abe, Tomohiko; Hoshina, Teruhiko, deceased; Hoshina, Ikuko, heir; Hoshina, Aya, heir; and Hoshina, Ken-Nosuke, heir, 4,469,619, Cl. 252-301.40R.

Abel, William A.: *See—*
Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., 4,469,280, Cl. 241-1.000.

Abelitis, Andris; and Hinterkeuser, Jakob, to Klockner-Humboldt-Deutz AG. Method for reducing the concentration of sulfur compounds in a system for calcining fine grained materials. 4,469,664, Cl. 423-244.000.

Abura, Yoshinori: *See—*
Isshiki, Saburo; and Abura, Yoshinori, 4,469,934, Cl. 219-222.000.

Accessory Sales, Inc.: *See—*
Wilson, Thomas W., 4,469,490, Cl. 55-1.000.

Accuratio Systems Inc.: *See—*
James, James R.; and Cryderman, W. G., 4,469,130, Cl. 137-606.000.

Ackerman, Abram, to Viewsonics, Inc. Tamper-resistant terminator for a female coaxial plug. 4,469,386, Cl. 339-37.000.

Ackerman, Dennis M.; Berkowitz, Barry A.; and Wiebelhaus, Virgil D., to SmithKline Beckman Corporation. Synergistic compositions of renal dopaminergic agent and β-blocker. 4,469,690, Cl. 424-244.000.

Acme Resin Corporation: *See—*
Cooke, Richard C., Jr., 4,469,517, Cl. 106-38.300.

Adams, Homer C.: *See—*
Helle, Gordon W.; Adams, Homer C.; and Kleine, Richard A., 4,469,083, Cl. 126-61.000.

Adams, Roy D.: *See—*
Haataja, Bruce A.; Kilpela, Tauno B.; Krueger, Gordon P.; and Adams, Roy D., 4,469,216, Cl. 198-382.000.

Adeka Argus Chemical Co., Ltd.: *See—*
Minagawa, Motonobu; Haruna, Tohru; and Takahashi, Masayuki, 4,469,828, Cl. 524-100.000.

Adiga, K. C.: *See—*
Shah, Dinesh O.; Adiga, K. C.; and SunderRam, A. N., 4,469,486, Cl. 44-51.000.

Adin, Anthony; Kovacs, Csaba A.; and Machiele, Delwyn E., to Eastman Kodak Company. Carbamoyloxy substituted couplers in a photothermographic element and process. 4,469,773, Cl. 430-222.000.

Adna Aktiengesellschaft: *See—*
Truninger, Thomas, 4,469,191, Cl. 180-233.000.

Adrian, Donald J.: *See—*
Cernius, Roger K.; French, Don M.; Singer, Paul A.; Adrian, Donald J.; and Parsons, Donald I., 4,470,022, Cl. 331-78.000.

Advanced Technology Laboratories, Inc.: *See—*
Harui, Norio, 4,469,106, Cl. 128-660.000.

Adwest Engineering Limited: *See—*
Millard, Barry J., 4,469,342, Cl. 280-148.000.

Aerosol Service AG: *See—*
Obrist, Gerhard, 4,469,252, Cl. 222-135.000.

Agence Nationale de Valorisation de la Recherche: *See—*
Labarre, Jean-Francois; Sournies, Francois; van de Grampel, Johan C.; and Van Der Huizen, Adriaan A., 4,469,687, Cl. 424-200.000.

Agency of Industrial Science and Technology: *See—*
Abe, Takashi; Baba, Hajime; Hayashi, Eiji; and Nagase, Shunji, 4,469,879, Cl. 549-465.000.
Anzai, Shunichi; and Sakamoto, Takeshi, 4,469,088, Cl. 126-436.000.
Kaminishi, Tokishi, 4,470,040, Cl. 340-566.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Treiber, Helmut; Gotze, Christian; and Lammel, Gunter, 4,469,291, Cl. 242-191.000.

Ahola, Clifford J.: *See—*
Brubaker, Ronald L.; Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,469,284, Cl. 241-25.0TR.

Aikoh Co., Ltd.: *See—*
Takashima, Masaru; Matsuyama, Shigeru; Hayashi, Yoshihiro; Ito, Hisaji; Fujita, Kotaro; Inai, Kenji; and Takemoto, Shoji, 4,469,309, Cl. 266-44.000.

Aisin Seiki Co., Ltd.: *See—*
Hayashi, Masaharu; and Kuga, Ryoichi, 4,469,209, Cl. 192-58.00B.

Aisin Seiki Kabushiki Kaisha: *See—*
Fukuda, Hiroaki; and Watanabe, Tsukasa, 4,469,922, Cl. 200-83.00R.
Kitamura, Kazuhiko, 4,469,127, Cl. 137-554.000.
Yokoi, Masatada; Kondo, Toshio; Katagiri, Masayoshi; Kaisaku, Tetsuo; and Mizuno, Yoji, 4,469,337, Cl. 277-212.0FB.

Aisin Warner Kabushiki Kaisha: *See—*
Miki, Nobuaki; and Yokoyama, Shoji, 4,470,117, Cl. 364-424.100.
Motomura, Jiro; Watanabe, Kazuaki; and Nishikawa, Seiichi, 4,469,206, Cl. 192-3.280.

Aizawa, Akira: *See—*
Takeuchi, Osamu; and Aizawa, Akira, 4,469,314, Cl. 266-252.000.

Ajiki, Yoshio; Honda, Shoichi; and Matsuura, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Valve actuating method for internal combustion engine with valve operation suspending function. 4,469,061, Cl. 123-198.00F.

Ajinomoto Co., Inc.: *See—*
Yamane, Isao; Sato, Takeshi; Kudo, Toshio; Minamoto, Yoshiki; and Tachibana, Takehiko, 4,469,790, Cl. 435-68.000.

Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Laminated sheets. 4,469,741, Cl. 428-214.000.

Akazawa, Toshitada; Suzuki, Kohkichi; and Haga, Toshikatu, to Hodogaya Chemical Company, Ltd. Apparatus for electrolytical production of alkaline chlorate. 4,469,576, Cl. 204-237.000.

Akimov, Pavel I.: *See—*
Perevodchikov, Vladimir I.; Akimov, Pavel I.; Skibityansky, David A.; Shapenko, Valentina N.; Loginov, Lev V.; Shapiro, Alexandr L.; Yakovlev, Arkady N.; and Kosmachevsky, Vitaly M., 4,469,982, Cl. 313-293.000.

Akiyama, Teruo: *See—*
Nakamura, Takayoshi; Maeda, Kazuo; Ohno, Masayuki; and Akiyama, Teruo, 4,469,308, Cl. 254-350.000.

Akutsu, Kazushi: *See—*
Hasebe, Koshi; Totani, Shinzo; Muramoto, Kazuo; Mikuni, Hajime; Akutsu, Kazushi; and Minami, Kazuaki, 4,470,119, Cl. 364-449.000.

Akzona: *See—*
van der Hauw, Tjerk; and Jaspers, Hans, 4,469,575, Cl. 204-159.190.

Albagnac, Rene D. M., to Societe Anonyme de Telecommunications. Device for regulating a Joule-Thomson effect refrigerator. 4,468,935, Cl. 62-514.0JT.

Albarella, James P., to Miles Laboratories, Inc. Digoxigenin immunogens, antibodies, labeled conjugates, and related derivatives. 4,469,797, Cl. 436-536.000.

Albert, Hans, to Scapa Inc. Papermakers fabric of link and pintle construction. 4,469,221, Cl. 198-851.000.

Alberta Research Council: *See—*
George, Zacheria M., 4,469,803, Cl. 502-25.000.

Alberts, Heinrich; and Steinberger, Helmut, to Bayer Aktiengesellschaft. Aqueous polysiloxane formulations. 4,469,840, Cl. 524-500.000.

Albright, Henry J.; and Wirstlin, Arthur N., to Fawn Engineering Company. Single vend newspaper apparatus. 4,469,246, Cl. 221-225.000.

Alexander, John H., to ITT Industries, Inc. Multilayer ceramic dielectric capacitors. 4,470,098, Cl. 361-321.000.

Alfa Romeo Auto S.p.A.: *See—*
Bassi, Aldo; and Arcari, Franco, 4,469,071, Cl. 123-481.000.

Alkaloida Vegyeszeti Gyar: *See—*
Tihanyi, Endre; Andrasi, Ferenc; Gal, Melinda; and Sineger, Eleonora, 4,469,692, Cl. 424-249.000.

Allemand, Robert; Gagelin, Jean-Jacques; and Tournier, Edmond, to Commissariat a l'Energie Atomique. X-Ray detector with compensating secondary chamber. 4,469,947, Cl. 250-385.000.

Allen-Bradley Company: *See—*
Barnich, Richard G.; Braun, Thomas B.; Lawrence, Lloyd R.; and Schmitt, Peter C., 4,470,042, Cl. 340-721.000.
Lombardi, Steven A., 4,470,092, Cl. 361-23.000.

Allen, Richard C.: *See—*
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,469,869, Cl. 546-198.000.

Allenbaugh, George G., Jr., to Premier Industrial Corporation. Constant pressure nozzle with selective volume limit control. 4,469,279, Cl. 239-453.000.

Allgood, Robert N.: *See*—
Luke, Kevin; and Allgood, Robert N., 4,469,959, Cl. 307-264.000.

Allied Corporation: *See*—
Armor, John N.; and Carlson, Emery J., 4,469,816, Cl. 502-333.000.
Bernier, John A.; Kunselman, Garry C.; and Kalizenbach, Karl W., 4,469,441, Cl. 356-316.000.
Bost, Ralph H., Jr., 4,469,037, Cl. 112-266.200.
Chandrasekaran, Swayambu, 4,469,854, Cl. 526-91.000.
Segal, Leon; and Testa, Anthony, 4,469,543, Cl. 156-283.000.
Simmonds, Richard S.; and Owen, Wells P., 4,469,792, Cl. 436-11.000.

Allis-Chalmers Corporation: *See*—
Hansen, Kenneth N., 4,469,208, Cl. 192-4.00A.
Johansen, Roy W., 4,468,980, Cl. 74-705.000.

Alpha Enterprises, Inc.: *See*—
Hehn, Bruce A., 4,469,231, Cl. 211-11.000.

Alpha Ocean Systems, Inc.: *See*—
Ogg, Robert D., 4,469,042, Cl. 114-304.000.

Alsthom-Atlantique: *See*—
Guyot, Jean; Guillard, Jean-Michel; and Bauchet, Germain, 4,469,973, Cl. 310-258.000.

Aluminum Company of America: *See*—
Booz, A. David, 4,469,282, Cl. 241-16.000.
Bowman, Kenneth A.; and Zuber, Chester L., 4,468,847, Cl. 29-403.400.
Hays, Laurence W.; and Cotten, H. Wayne, 4,469,570, Cl. 204-67.000.

Amano, Katsumi; and Kinoshita, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Shift control system for keyboards. 4,470,038, Cl. 340-365.00S.

Amemiya, Norio: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,469,323, Cl. 271-288.000.

American Hoechst Corporation: *See*—
Barton, Oliver A.; and Wright, James D., 4,469,772, Cl. 430-163.000.

American Microsystems, Inc.: *See*—
Haque, Yusuf A., 4,470,126, Cl. 364-825.000.

American Standard Inc.: *See*—
McBrian, John E., 4,470,039, Cl. 340-514.000.

American Sterilizer Company: *See*—
Moore, Vincent, 4,469,335, Cl. 277-27.000.

Amistar Corporation: *See*—
Roecks, Carl C., 4,469,268, Cl. 227-76.000.

Amouroux, Jacques; and Cavadias, Simeon, to Electricite de France (Service National). Process and installation for heating a fluidized bed by plasma injection. 4,469,508, Cl. 75-10.00R.

AMP Incorporated: *See*—
Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Ioaif, 4,469,389, Cl. 339-75.0MP.
McHugh, Robert G., 4,469,387, Cl. 339-42.000.

Anaconda-Ericsson, Inc.: *See*—
Wade, Robert M.; Benjamin, George N.; Solomon, Marwick H.; and Jessop, Daniel H., 4,469,538, Cl. 156-51.000.
Wade, Robert M.; Benjammin, George N.; Solomon, Marwick H.; and Jessop, Daniel H., 4,469,539, Cl. 156-51.000.

Anarwala, Mushtaq, to Sealtran Corporation. Forgery-deterrent document lamination. 4,469,353, Cl. 283-74.000.

Anchor, Michael J.: *See*—
Dexheimer, Edward M.; Anchor, Michael J.; Thir, Basil; and Eisenstein, Stephen E., 4,469,820, Cl. 521-125.000.

Ancos Co., Ltd.: *See*—
Hashimoto, Yasuyuki; and Shimizu, Kazuo, 4,469,462, Cl. 401-107.000.

Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., to Atlantic Richfield Company. Method of making combination curved-lightweight mirror module. 4,468,848, Cl. 29-526.00R.

Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., to Atlantic Richfield Company. Method of making a curved mirror module. 4,468,849, Cl. 29-526.00R.

Anderson, Bradley D.; and Conradi, Robert A., to Upjohn Company, The. Sulfonate containing ester prodrugs of corticosteroids. 4,469,689, Cl. 424-243.000.

Anderson, David E.: *See*—
Odill, Frank J.; and Anderson, David E., 4,469,467, Cl. 404-25.000.

Anderson, Hugh: *See*—
Stevens, David; and Anderson, Hugh, 4,469,418, Cl. 354-63.000.

Anderson, James J., to Mobil Oil Corporation. Low smoke, halohydrocarbon-compatible urethane-isocyanurate foam compositions. 4,469,821, Cl. 521-131.000.

Anderson, Patrick J.; and Forschler, Robert D., to Eaton Corporation. Fluid pressure and signal controller. 4,469,120, Cl. 137-85.000.

Anderson, Richard J.; and Lee, Shy-Fuh, to Zoecon Corporation. Substituted pyridyloxyphenoxyhydroxyketones. 4,469,872, Cl. 546-302.000.

Anderson, Robert H., to Litton Systems, Inc. Diffusion-lighted magneto-optic display. 4,470,045, Cl. 340-783.000.

Andersson, Ebert: *See*—
Eriksson, T. Lennart; Andersson, Ebert; and Nystrom, Olle, 4,469,034, Cl. 110-346.000.

Ando, Hiromi: *See*—
Takayama, Toshio; Ando, Hiromi; and Endou, Mitsuhiro, 4,469,009, Cl. 91-376.00R.

Andra Jewels Limited: *See*—
Kirk, Roy; and Herbert, Alan, 4,468,936, Cl. 63-12.000.

Andrasi, Ferenc: *See*—
Tihanyi, Endre; Andrasi, Ferenc; Gal, Melinda; and Sineger, Eleonora, 4,469,692, Cl. 424-249.000.

Andrews, Kenneth J. M., to Hoffmann-La Roche Inc. Substituted phosphinic acids. 4,469,686, Cl. 424-200.000.

Andritz-Ruthner Industrieanlagen Aktiengesellschaft: *See*—
Hampel, Josef, 4,469,565, Cl. 204-15.000.

Andrus, James S. Rebar coupler. 4,469,465, Cl. 403-282.000.

Aneja, Viney P.: *See*—
Sikdar, Subhas K.; and Aneja, Viney P., 4,469,561, Cl. 203-39.000.

Anic S.p.A.: *See*—
Rivetti, Franco; Romano, Ugo; and Di Muzio, Nicola, 4,469,897, Cl. 568-650.000.

Anson, Jay S. Fishing lure. 4,468,879, Cl. 43-42.060.

Anzai, Akio: *See*—
Kuroda, Shigeo; Takahashi, Takahiko; and Anzai, Akio, 4,469,535, Cl. 148-187.000.

Anzai, Shunichi; and Sakamoto, Takeshi, to Agency of Industrial Science and Technology, The. Solar collector. 4,469,088, Cl. 126-436.000.

Anzai, Yoshinori: *See*—
Tsuchihashi, Michihiro; Anzai, Yoshinori; Kajiwara, Toshiro; and Saikatsu, Takeo, 4,469,986, Cl. 313-610.000.

Aoki, Takashi: *See*—
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,469,431, Cl. 355-3.0SH.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,469,432, Cl. 355-3.00R.

Aoyama, Nagara: *See*—
Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, 4,469,154, Cl. 144-2.00R.

Appleton Papers Inc.: *See*—
Bodmer, Jerome R.; and Peters, John H., 4,470,058, Cl. 346-212.000.
Glanz, Kenneth D., 4,470,057, Cl. 346-209.000.

Applied Magnetics-Magnetic Head Divison Corporation: *See*—
Martin, Richard T., 4,469,719, Cl. 427-255.500.

Applied Power Inc.: *See*—
Skover, Nick, Jr.; and Sabel, Garry J., 4,469,010, Cl. 91-408.000.

Applied Technologies Associates: *See*—
Van Steenwyk, Donald H., 4,468,863, Cl. 33-304.000.

Aquino, Luig G.: *See*—
Galiasso Tailleur, Roberto E.; Salazar Guillen, Jose A.; Huskey, Donald; Morales, Alfredo L.; and Aquino, Luig G., 4,469,587, Cl. 208-61.000.

Arai, Kozo: *See*—
Shingu, Hideo; Arai, Kozo; Sakaguchi, Masashi; Nishide, Toshio; Watanabe, Osamu; Tashiro, Yasushi; Otsuka, Ryotatsu; and Tsukamoto, Kenji, 4,469,512, Cl. 75-63.000.

Arai, Masaaki; Kanbara, Masahiro; and Morio, Minoru, to Sony Corporation. Color video still picture playback device. 4,470,076, Cl. 358-312.000.

Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Ohashi, Masabumi, to Hitachi, Ltd. Copper matrix electrode having carbon fibers therein. 4,470,063, Cl. 357-67.000.

Araki, Masashi; and Higashio, Yasuhiko, to Sumitomo Chemical Company, Limited. Selective hydrogenation method for hydrocarbons. 4,469,907, Cl. 585-259.000.

Arbed S.A.: *See*—
Metz, Paul; Legille, Edouard; Schleimer, Francois; and Weiner, Antoine, 4,469,510, Cl. 75-51.000.

Arcari, Franco: *See*—
Bassi, Aldo; and Arcari, Franco, 4,469,071, Cl. 123-481.000.

Arendt, Franz: *See*—
Loffler, Gerhard; and Arendt, Franz, 4,469,025, Cl. 101-171.000.

Arkles, Barry C., to Petrarch Systems Inc. [2-(p-t-Butylphenyl)ethyl]silanes and method of making the same. 4,469,881, Cl. 556-453.000.

Armond, Joseph A.; Buky, Gabriel R.; and Patrick, Fred, to Electro-Matic Products Co. Demagnetizing apparatus and method. 4,470,094, Cl. 361-149.000.

Armor, John N.; and Carlson, Emery J., to Allied Corporation. Palladium on alumina aerogel catalyst composition and process for making same. 4,469,816, Cl. 502-333.000.

Armour Pharmaceutical Company: *See*—
Orlowski, Ronald C.; and Seyler, Jay K., 4,469,632, Cl. 260-112.50T.

Armstrong International, Inc.: *See*—
Keech, David A.; Kirchner, Robert T.; Vander Wal, Nicholas M.; Sorenson, John E.; and Driscoll, Mark D., 4,468,962, Cl. 73-200.000.

Arndt, George I.: *See*—
Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., 4,469,075, Cl. 123-523.000.

Asahi-Dow Limited: *See*—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,752, Cl. 428-475.800.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,753, Cl. 428-475.800.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Kunitake, Toyoki; and Okahata, Yoshio, 4,469,621, Cl. 252-353.000.
Ueda, Ikuo; and Kai, Rikiya, 4,469,624, Cl. 252-513.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Shirayanagi, Moriyasu, 4,469,413, Cl. 350-432.000.
Asano, Hiroshi; Shimamune, Takayuki; and Nitta, Hideo, to Permelec Electrode Ltd. Electrolytic electrode having high durability. 4,469,581, Cl. 204-290.00F.
Asano, Noriyuki: *See*—
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,469,417, Cl. 354-404.000.
Aschoff, Jorg; and Scheidel, Wolfgang, to Robert Bosch GmbH. Air conditioning device for power vehicle. 4,469,166, Cl. 165-25.000.
Asea Akt: *See*—
Hanas, Bertil; and Rudolph, Gunter, 4,469,162, Cl. 164-154.000.
Asher, James C., to Atari, Inc. Controller unit for video game. 4,469,330, Cl. 273-148.00B.
Ashida, Hisashi: *See*—
Okamoto, Yukio; Tarumi, Noriyoshi; and Ashida, Hisashi, 4,469,429, Cl. 355-3.0DD.
Ashland Oil, Inc.: *See*—
Goel, Anil B., 4,469,636, Cl. 260-414.000.
Hettinger, William P., Jr.; and Beck, Hubert W., 4,469,588, Cl. 208-77.000.
Ashton, Richard F.; and Thompson, David S., to Reynolds Metals Company. Aluminum armor plate system. 4,469,537, Cl. 148-440.000.
Asmar, Raymond A.; and Canavan, John. Automatic blood pressure measurement device with threshold compensation circuitry and method for performing the same. 4,469,107, Cl. 128-681.000.
Assal, Tsvi F.: *See*—
Mott, Richard C.; Kroll, Robert T., Jr.; and Assal, Tsvi F., 4,470,148, Cl. 375-113.000.
Assarsson, Per G.; and Nagasuye, Joseph H., to St. Lawrence Technologies Limited. Continuous process and apparatus for modifying carbohydrate material. 4,469,524, Cl. 127-1.000.
Astra Lakemadel Aktiebolag: *See*—
Lindberg, Ulf H. A.; and Ogren, Sven-Ove, 4,469,707, Cl. 424-330.000.
Asulab S.A.: *See*—
Leuenberger, Claude-Eric, 4,470,024, Cl. 331-108.00D.
AT&T Bell Laboratories: *See*—
Okinaka, Yutaka; Smith, Craig G.; and Smith, Lawrence E., 4,469,564, Cl. 204-15.000.
Turner, Dennis R., 4,469,554, Cl. 156-657.000.
Atago, Takeshi: *See*—
Manaka, Toshio; and Atago, Takeshi, 4,469,064, Cl. 123-339.000.
Atari, Inc.: *See*—
Asher, James C., 4,469,330, Cl. 273-148.00B.
Atlantic Richfield Company: *See*—
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,848, Cl. 29-526.00R.
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,849, Cl. 29-526.00R.
Lordi, Frank E., 4,469,843, Cl. 525-67.000.
Yoo, Jin S.; and Jaecker, John A., 4,469,589, Cl. 208-120.000.
Atun, Albert: *See*—
De Luca, Paul V.; and Atun, Albert, 4,470,102, Cl. 361-428.000.
Audeh, Costandi A.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Catalyst and process for hydroprocessing heavy oils. 4,469,807, Cl. 502-74.000.
Audi Nsu Auto Union AG: *See*—
van den Boom, Johannes; Leitner, Wilfried; Salewsky, Gert; and Gassen, Hans-Peter, 4,469,316, Cl. 267-140.100.
Augustine, Robert J.: *See*—
Herzl, Peter J.; and Augustine, Robert J., 4,468,971, Cl. 73-861.280.
Ausonia Farmaceutici s.r.l.: *See*—
De Vincentiis, Leonardo, 4,469,691, Cl. 424-249.000.
Automotive Products plc: *See*—
Hodkinson, Harold, 4,468,926, Cl. 60-550.000.
Autotrol Corporation: *See*—
Seal, J. David, 4,469,602, Cl. 210-662.000.
Axelson, Inc.: *See*—
Snyder, David E.; and Hiller, Don, 4,469,119, Cl. 137-72.000.
Axen, Rolf E. A. V.; Oscarsson, Sven O. H.; Ponterius, Per H. G.; and Carlsson, Jan P. E., to Pharmacia Diagnostics AB. Assaying methods involving biospecific affinity reactions. 4,469,796, Cl. 436-518.000.
Ayerst, McKenna & Harrison Inc.: *See*—
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, 4,469,693, Cl. 424-250.000.
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, 4,469,694, Cl. 424-250.000.
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, 4,469,695, Cl. 424-250.000.
B. F. Goodrich Company, The: *See*—
Bok, Lowell D.; and Baden, Bradley J., 4,469,204, Cl. 188-218.0XL.
Haylett, Lyle M., 4,470,120, Cl. 364-507.000.
B.K.S. Surveys Limited: *See*—
Stevens, David; and Anderson, Hugh, 4,469,418, Cl. 354-63.000.
Baar & Stroud Limited: *See*—
Neil, Iain A., 4,469,396, Cl. 350-1.300.
Baba, Hajime: *See*—
Abe, Takashi; Baba, Hajime; Hayashi, Eiji; and Nagase, Shunji, 4,469,879, Cl. 549-465.000.
Babcock & Wilcox Company, The: *See*—
Keyes, Marion A., IV; and Thompson, William L., 4,470,019, Cl. 328-144.000.
Badcock, David N. W., to Kango Wolf Power Tools Limited. Portable electric power tools. 4,469,924, Cl. 200-157.000.
Baden, Bradley J.: *See*—
Bok, Lowell D.; and Baden, Bradley J., 4,469,204, Cl. 188-218.0XL.
Baer, Helen W. Barbecue grill. 4,469,019, Cl. 99-339.000.
Baetsle, Leon H. J. M.: *See*—
Vandevelde, Leon E. J.; Baetsle, Leon H. J. M.; and Huys, Daniel J. G., 4,469,629, Cl. 252-631.000.
Baggi, Denis L. Harmony machine. 4,468,998, Cl. 84-1.030.
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, to Ayerst, McKenna & Harrison Inc. 2-(4-Substituted alkyl-1-piperazinyl)-2,4,6-cycloheptatrien-1-one derivatives. 4,469,693, Cl. 424-250.000.
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, to Ayerst, McKenna & Harrison Inc. 2-(1-Piperazinyl)-2,4,6-cycloheptatrien-1-one derivatives. 4,469,694, Cl. 424-250.000.
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, to Ayerst, McKenna & Harrison, Inc. 2-(4-Hydroxyalkyl-1-piperazinyl)-2,4,6-cycloheptatrien-1-one derivatives. 4,469,695, Cl. 424-250.000.
Bailly, Richard L. Foam plastic material with moisture removing properties. 4,469,740, Cl. 428-212.000.
Baird, Hal C. Liquid depth measuring device. 4,468,859, Cl. 33-126.40R.
Baker Industries, Inc.: *See*—
Vogt, William R.; and Wynne, John M., 4,470,047, Cl. 340-825.360.
Baker, Lewin T., to General Electric Company. Method and circuitry for chirped oscillator automatic frequency control. 4,470,025, Cl. 331-178.000.
Bakermans, Johannes C. W.: *See*—
Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, 4,469,389, Cl. 339-75.0MP.
Ballard, George S.: *See*—
Walkey, Laurence J.; Woolf, Anthony J.; and Ballard, George S., 4,469,149, Cl. 141-94.000.
Bandlish, Baldev K.; and Nudenberg, Walter, to Uniroyal, Inc. Stabilizer systems useful in lubricating oils and method for stabilizing lubricating oils. 4,469,609, Cl. 252-19.000.
Bares, Frank P.: *See*—
Kingsbury, Charles M.; Beckwith, Bruce R.; Bares, Frank P.; and Gardner, Edward B., 4,469,501, Cl. 65-158.000.
Barnes, David I.: *See*—
Robinson, Joseph G.; and Barnes, David I., 4,469,814, Cl. 502-263.000.
Barnhill, W. David. Football stencil. 4,468,862, Cl. 33-174.00B.
Barnich, Richard G.; Braun, Thomas B.; Lawrence, Lloyd R.; and Schmitt, Peter C., to Allen-Bradley Company. System for displaying graphic and alphanumeric data. 4,470,042, Cl. 340-721.000.
Barrett, Harold F. Method of treating conditions such as tumors in living bodies. 4,469,103, Cl. 128-400.000.
Barton, Oliver A.; and Wright, James D., to American Hoechst Corporation. Water developable dye coating on substrate with two diazo polycondensation products and water soluble polymeric binder. 4,469,772, Cl. 430-163.000.
Bascou, Jacques, to Regie Nationale des Usines Renault. Electric locking device, particularly for an automobile hood. 4,468,941, Cl. 70-241.000.
BASF Aktiengesellschaft: *See*—
Bueltjer, Uwe; Horacek, Heinrich; Druschke, Wolfgang; Franzmann, Gernot; Klahr, Erhard; and Foerster, Hans-Juergen, 4,469,831, Cl. 524-112.000.
Hibst, Hartmut, 4,469,669, Cl. 423-594.000.
Lynch, John; Vyvial, Rudolf; Zuerger, Manfred; and Borho, Klaus, 4,469,775, Cl. 430-273.000.
Nissen, Dietmar; and Hickmann, Eckhard, 4,469,653, Cl. 264-51.000.
Reissenweber, Gernot; and Schirmer, Ulrich, 4,469,884, Cl. 560-160.000.
BASF Farben & Fasern AG: *See*—
Schwarz, Gunther, 4,469,749, Cl. 428-403.000.
BASF Wyandotte Corporation: *See*—
Dexheimer, Edward M.; Anchor, Michael J.; Thir, Basil; and Eisenstein, Stephen E., 4,469,820, Cl. 521-125.000.
Iyengar, Doreswamy R., 4,469,519, Cl. 106-288.00Q.
Stolz, Theodore O.; Moore, Richard A.; and Lutz, James P., 4,469,822, Cl. 521-167.000.
Basic Packaging Systems, Inc.: *See*—
Blankenship, Bernard F., 4,470,152, Cl. 383-37.000.
Bassi, Aldo; and Arcari, Franco, to Alfa Romeo Auto S.p.A. Device for controlling the fuel-feed to an internal combustion engine. 4,469,071, Cl. 123-481.000.
Batchelor, Douglas R., to Libman Broom Company. Sponge mop. 4,468,830, Cl. 15-119.00A.
Batchelor, Douglas R., to Libman Broom Company. Refill sponge mop assembly. 4,468,832, Cl. 15-244.00R.
Batt, Mary L.: *See*—
Huggins, James E.; Batt, Mary L.; and Kozarek, William J., 4,469,684, Cl. 424-181.000.
Battelle Development Corporation: *See*—
McCrady, Paul E.; and Reif, Robert B., 4,468,922, Cl. 57-402.000.
Battelle Memorial Institute: *See*—
Coleman, Carl R.; and Hughes, Kenneth E., 4,469,101, Cl. 128-334.00R.
Bauchet, Germain: *See*—
Guyot, Jean; Guillard, Jean-Michel; and Bauchet, Germain, 4,469,973, Cl. 310-258.000.
Baumann, Hans D. Low torque butterfly valve disc. 4,469,305, Cl. 251-305.000.
Baur, Josef; Bernhart, Armin; and Ellensohn, Roland, to Baur Pruf - und Messtechnik KG. Apparatus for testing the electrical breakdown

resistance potential of insulating media and/or cooling media. 4,470,007, Cl. 324-51.000.

Baur Pruf - und Messtechnik KG: *See*—
Baur, Josef; Bernhart, Armin; and Ellensohn, Roland, 4,470,007, Cl. 324-51.000.

Bax, Hanns-Jorg: *See*—
Konietzny, Alfred; Zagefka, Hans-Dieter; Rombusch, Konrad; and Bax, Hanns-Jorg, 4,469,829, Cl. 524-103.000.

Baxter, Alan R.: *See*—
Fler, Jack P.; and Baxter, Alan R., 4,469,384, Cl. 312-333.000.

Baxter, John D.; Fettes, Ivy; and Shine, John, to University of California, The Regents of the. Fusion peptides comprising an expressible bacterial gene and β-endorphin. 4,469,631, Cl. 260-112.50E.

Baxter, Ronald D.; and Freud, Paul J., to Leeds & Northrup Company. Thin film resistance thermometer with a predetermined temperature coefficient of resistance and its method of manufacture. 4,469,717, Cl. 427-102.000.

Baxter Travenol Laboratories, Inc.: *See*—
Becker, Lawrence F.; and Pham, Christine, 4,469,483, Cl. 604-280.000.
Coon, Clifford L.; and Simon, Robert L., 4,469,898, Cl. 568-683.000.
Figler, Alan A.; Wilson, Pamela; and Zielsdorf, Randall A., 4,469,480, Cl. 604-52.000.
Laurin, Dean G., 4,469,835, Cl. 524-349.000.

Bayer Aktiengesellschaft: *See*—
Alberts, Heinrich; and Steinberger, Helmut, 4,469,840, Cl. 524-500.000.
Bruck, Dieter W.; Jeblick, Werner; and Ruetz, Lothar, 4,469,830, Cl. 524-109.000.
Heller, Harold; and Schapel, Dietmar, 4,469,502, Cl. 71-11.000.
Jager, Gerhard; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,469,902, Cl. 568-812.000.
Rasshofer, Werner; Thoma, Wilhelm; and Schmitz, Anton, 4,469,856, Cl. 528-45.000.
Rosentreter, Ulrich; Puls, Walter; and Bischoff, Hilmar, 4,469,696, Cl. 424-250.000.

Beard, Walter C. Reclosable valve with removable hermetic external seal means. 4,469,253, Cl. 222-153.000.

Beattie, Patrick J.; Shaffer, Douglas E.; and Sylvester, Richard J., to John D. Brush & Co., Inc. Live bolt lock mechanism for safe door. 4,468,943, Cl. 70-302.000.

Beaver, Lois A.; and Guiochon, Georges A., to Varex Corporation. System and apparatus for multi-dimensional real-time chromatography. 4,469,601, Cl. 210-658.000.

Beck, Hubert W.: *See*—
Hettinger, William P., Jr.; and Beck, Hubert W., 4,469,588, Cl. 208-77.000.

Becker, Lawrence F.; and Pham, Christine, to Baxter Travenol Laboratories, Inc. Radiopaque catheter. 4,469,483, Cl. 604-280.000.

Becker, Lynn T., to Tri-Veyor Corp. Magnetic coupling assembly for accumulating power roll conveyor. 4,469,220, Cl. 198-781.000.

Becker, Thomas P.: *See*—
Olson, Gene E.; Becker, Thomas P.; and Grover, Donald D., 4,469,952, Cl. 250-551.000.

Beckwith, Bruce R.: *See*—
Kingsbury, Charles M.; Beckwith, Bruce R.; Bares, Frank P.; and Gardner, Edward B., 4,469,501, Cl. 65-158.000.

Becton Dickinson and Company: *See*—
Burns, James A., 4,469,144, Cl. 141-1.000.

Beecham Group p.l.c.: *See*—
Gardner, Derek V.; and White, Trevor J., 4,469,697, Cl. 424-250.000.

Bekowies, Paul J.: *See*—
Case, George D.; Stiller, Alfred H.; Bekowies, Paul J.; and Panson, Anthony G., 4,469,583, Cl. 208-8.0LE.

Belfoure, Edward L.; and Miller, Kenneth F., to General Electric Company. Compositions. 4,469,850, Cl. 525-439.000.

Belik, Vladimir K.; Kurach, Bogdan V.; and Trach, Yaroslav S., to Vsesojuzny Konstruktorsko-Experimentalny Institut Avtobusostroenya. Module element of city bus or like vehicle and bus assembled on the basis of such module elements. 4,469,369, Cl. 296-197.000.

Bell, Bill. Momentary visual image apparatus. 4,470,044, Cl. 340-755.000.

Bell, Douglas E. Connector bracket for an engine-lifting winch. 4,469,307, Cl. 254-199.000.

Bell Telephone Laboratories, Incorporated: *See*—
Dimmick, James O., 4,470,112, Cl. 364-200.000.
Wehr, Larry A., 4,470,115, Cl. 364-300.000.

Beloit Corporation: *See*—
Sanford, Charles L., 4,469,556, Cl. 162-380.000.

Belz, Roland K. Composite foil, particularly a toilet seat support, as well as process. 4,469,728, Cl. 428-36.000.

Bendix Corporation, The: *See*—
Tuohig, Wayne D.; and Sagady, Calman S., 4,469,626, Cl. 252-514.000.

Benezra, Leo L.: *See*—
Covitch, Michael J.; DeRespiris, Donald L.; Benezra, Leo L.; and Vauss, Elvin M., 4,469,579, Cl. 204-283.000.

Benjamin, Gary H.: *See*—
Klose, Karl W.; and Benjamin, Gary H., 4,469,546, Cl. 156-406.200.

Benjamin, George N.: *See*—
Wade, Robert M.; Benjamin, George N.; Solomon, Marwick H.; and Jessop, Daniel H., 4,469,538, Cl. 156-51.000.

Benjammin, George N.: *See*—
Wade, Robert M.; Benjammin, George N.; Solomon, Marwick H.; and Jessop, Daniel H., 4,469,539, Cl. 156-51.000.

Bennett, John E.; Harney, David E.; and Mitchell, Thomas A., to Diamond Shamrock Corporation. Rechargeable lithium/sulfur ammoniate battery. 4,469,761, Cl. 429-50.000.

Bennett, Moreland P., to General Electric Company. Electrical termination comprising a soft aluminum lead and a terminal of hard aluminum alloy butt-welded thereto. 4,469,395, Cl. 339-278.00C.

Berg, Lauren V. Fluid direction meter suitable for angle of attack meter for aircraft. 4,468,961, Cl. 73-180.000.

Berger, Dieter; Braun, Franz; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; and Werner, Wolfgang, to Boehringer Mannheim GmbH. Amino acid and peptide esters of leuko-indoaniline compounds and compositions for the detection of proteolytic enzymes. 4,469,789, Cl. 435-23.000.

Berger, Hans S.: *See*—
Nugent, James H.; and Berger, Hans S., 4,470,012, Cl. 324-168.000.

Bergvall, Bengt A., to Husqvarna Aktiebolag. Arrangement in an electronic sewing machine. 4,469,035, Cl. 112-158.00B.

Bergwerksverband GmbH: *See*—
Leonhardt, Joachim; Wagener, Bruno; Klein, Hans-Dieter; and Siefer, Wilfried, 4,468,970, Cl. 73-762.000.
Peters, Werner; Juntgen, Harald; Van Heek, Karl H.; Kirchhoff, Reinhold; and Wagener, Heinrich, 4,469,487, Cl. 48-86.00R.

Berkowitz, Barry A.: *See*—
Ackerman, Dennis M.; Berkowitz, Barry A.; and Wiebelhaus, Virgil D., 4,469,690, Cl. 424-244.000.

Bernhart, Armin: *See*—
Baur, Josef; Bernhart, Armin; and Ellensohn, Roland, 4,470,007, Cl. 324-51.000.

Bernier, John A.; Kunselman, Garry C.; and Kaltenbach, Karl W., to Allied Corporation. Scanning monochromator system with direct coupled dispersing element-electromagnetic drive transducer assembly. 4,469,441, Cl. 356-316.000.

Berris, Richard E., Jr.: *See*—
Resch, Robert J.; Hazony, Dov; and Berris, Richard E., Jr., 4,470,001, Cl. 318-810.000.

Berth, Michel; Venger, Camille; and Martin, Gerard M., to U.S. Philips Corporation. Method of manufacturing a semiconductor device of GaAs by two species ion implantation. 4,469,528, Cl. 148-1.500.

Bertolacini, Ralph J.: *See*—
Sorreatino, Cecelia M.; Pellet, Regis J.; and Bertolacini, Ralph J., 4,469,812, Cl. 502-230.000.

Bertoldi, Attilio. Machine for the fulling and washing of cord fabrics. 4,468,937, Cl. 68-19.100.

Betsill, Harry E., to Du Pont de Nemours, E. I., and Company. Capacitively coupled machine tool safety system having a digital quantizer. 4,470,046, Cl. 340-825.230.

BICC Public Limited Company: *See*—
Fairey, Norman R., 4,468,945, Cl. 72-262.000.

Bigo, Louis B.; and Ramousse, Patrick E., to Poclain Hydraulics. Pressurized fluid mechanism comprising reaction rollers mounted on pistons. 4,469,012, Cl. 91-491.000.

Bilen, Branislav J., to Institut Tehnickih Nauka Srpske Akademije Nauka I Umetnosti. Rudder steering apparatus for ships. 4,469,041, Cl. 114-144.00R.

Billingsley, James D.; and Cottingham, Donald T., to LTV Aerospace and Defense Co., The. Image motion and distortion stabilization for predetection scene information processing sensors. 4,470,151, Cl. 382-44.000.

Bingaman, Barrett P., to Cetec Corporation. Stabilized bias system for magnetic tape read and write heads. 4,470,084, Cl. 360-15.000.

Bio Research Inc.: *See*—
Kurtz, Robert J.; and LiCausi, Joseph M., 4,469,484, Cl. 604-321.000.

Biomed Design, Inc.: *See*—
Pestes, Arlin N., 4,468,914, Cl. 53-505.000.

Birkenbach, Alfred, to ITT Industries, Inc. Load-responsive braking pressure control device especially for vehicle brake systems. 4,469,378, Cl. 303-22.00R.

Bischoff, Hilmar: *See*—
Rosentreter, Ulrich; Puls, Walter; and Bischoff, Hilmar, 4,469,696, Cl. 424-250.000.

Biscuiterie Nantaise - BN: *See*—
Cosse, Lionel, 4,469,218, Cl. 198-438.000.
Cosse, Lionel, 4,469,219, Cl. 198-460.000.

Black, Alfred A. Poppet valve spring retainer with integral mechanical adjustable tappet. 4,469,057, Cl. 123-90.540.

Black & Decker Inc.: *See*—
Moores, Robert G., Jr., 4,468,826, Cl. 7-158.000.

Blackburn, Philip R., to Union Carbide Corporation. Test method for acetylene cylinders. 4,468,965, Cl. 73-587.000.

Blacker, Allen P.; and Garewal, Khem K. S., to Zenith Electronics Corporation. Means for enhancing brightness of a monochrome CRT without loss of resolution. 4,469,987, Cl. 315-14.000.

Bladyka, Paul J.: *See*—
Sperry, Charles R.; and Bladyka, Paul J., 4,469,251, Cl. 222-135.000.

Blanchet, James P.: *See*—
Franchuk, John M.; and Blanchet, James P., 4,469,267, Cl. 226-172.000.

Blankenship, Bernard F., to Basic Packaging Systems, Inc. Valve bag with alignment means. 4,470,152, Cl. 383-37.000.

Blasing, Horst: *See*—
Budinsky, Helmut; and Blasing, Horst, 4,469,526, Cl. 134-25.400.

Blewett, Charles W.; and Turner, Stephen W., to National Distillers and Chemical Corporation. Process for converting α-olefin dimers to higher more useful oligomers. 4,469,912, Cl. 585-525.000.

Blionas, Costas: *See*—
Haas, David J.; Blionas, Costas; and Muenzen, Joseph P., 4,469,403, Cl. 350-254.000.

Bloom, Terry R.; and Ellis, Marion E., to CTS Corporation. Apparatus and method for producing uniform fired resistors. 4,469,044, Cl. 118-665.000.

Blum, Klaus, to Wacker-Chemie GmbH. Process for stabilizing epoxide-containing perchloroethylene. 4,469,906, Cl. 570-116.000.

Blumer, John E.; and Linsenmeyer, Arthur F., to Dempster Industries Inc. Rotary chute for spreader. 4,469,210, Cl. 193-22.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain saturated ketones, organoleptic uses thereof and process for preparing same. 4,469,892, Cl. 568-382.000.

Bodine Electric Company: *See*—
Oltendorf, Norman E., 4,469,996, Cl. 318-696.000.

Bodmer, Jerome R.; and Peters, John H., to Appleton Papers Inc. Pressure-sensitive recording sheet. 4,470,058, Cl. 346-212.000.

Bodsworth, Colin, to National Research Development Corporation. Removing phosphorus from iron. 4,469,511, Cl. 75-51.000.

Boehringer Mannheim GmbH: *See*—
Berger, Dieter; Braun, Franz; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; and Werner, Wolfgang, 4,469,789, Cl. 435-23.000.

Boeing Company, The: *See*—
Burhans, Frank M., 4,469,730, Cl. 428-36.000.
Caldwell, Jack H., 4,469,354, Cl. 285-2.000.
Cole, James B., 4,469,297, Cl. 244-215.000.
Sarr, Dennis P., 4,470,122, Cl. 364-559.000.

Boesing, Hans; and Gabler, Dieter, to Ranco Incorporated. Engine coolant flow controlling valve. 4,469,133, Cl. 137-625.290.

Bogdanovic, Borislav: *See*—
Bonnemann, Helmut; and Bogdanovic, Borislav, 4,469,638, Cl. 260-439.0CY.

Bogri, Tibor: *See*—
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, 4,469,693, Cl. 424-250.000.
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, 4,469,694, Cl. 424-250.000.
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, 4,469,695, Cl. 424-250.000.

Bohlander, Peter J.: *See*—
Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., 4,469,112, Cl. 131-336.000.

Boise Cascade Corporation: *See*—
Mitchell, Gerald L.; Woerz, Stephen E.; and Setty, Thomas J., 4,469,547, Cl. 156-423.000.

Bok, Lowell D.; and Baden, Bradley J., to B. F. Goodrich Company, The. Brake apparatus. 4,469,204, Cl. 188-218.0XL.

Boldt, John: *See*—
Trezise, Richard; Boldt, John; and Gnutzman, Keith, 4,469,459, Cl. 400-216.100.

Bolger, Thomas V.: *See*—
Lewis, Henry G., Jr.; and Bolger, Thomas V., 4,470,069, Cl. 358-31.000.

Bonanno, Carmine, to Octave-Plateau Electronics Inc. Programmable synthesizer. 4,468,999, Cl. 84-1.100.

Bonded Products, Inc.: *See*—
Rockafellow, Gary B., 4,469,115, Cl. 137-15.000.

Bonnemann, Helmut; and Bogdanovic, Borislav, to Studiengesellschaft Kohle mbH. Production of transition metal complexes. 4,469,638, Cl. 260-439.0CY.

Booz, A. David, to Aluminum Company of America. Metal flake production. 4,469,282, Cl. 241-16.000.

Borbely, Gyorgy: *See*—
Radtke, Wolfgang; Schmidt, Friedrich H.; Reuter, Fritz; Moog, Walter; and Borbely, Gyorgy, 4,468,908, Cl. 52-483.000.

Borg-Warner Chemicals, Inc.: *See*—
DiBella, Eugene P., 4,469,644, Cl. 260-985.000.
Hardee, Carl L.; and Wagner, Robert E., 4,469,152, Cl. 141-312.000.

Borgoyn, Thomas P.: *See*—
Chewning, Marshall T., Jr.; and Borgoyn, Thomas P., 4,469,393, Cl. 339-198.0GA.

Borho, Klaus: *See*—
Lynch, John; Vyvial, Rudolf; Zuerger, Manfred; and Borho, Klaus, 4,469,775, Cl. 430-273.000.

Bornstein, Norman D.: *See*—
Oberle, Timothy T.; Schirmer, Henry G.; Bornstein, Norman D.; and Walters, Johnnie J., 4,469,742, Cl. 428-215.000.

Borror, Alan L.; and Ellis, Ernest W., to Polaroid Corporation. Photographic products. 4,469,877, Cl. 549-21.000.

Bost, Ralph H., Jr., to Allied Corporation. Method of producing for review a tufted fabric pattern. 4,469,037, Cl. 112-266.200.

Botta, Frank J.: *See*—
Thompson, Thomas D., III; Walsh, Thomas F.; and Botta, Frank J., 4,469,639, Cl. 260-448.00C.

Boudot, Jean E.; and Mazeau, Jean P., to Corning Glass Works. Moldable fluoroborate optical glasses. 4,469,800, Cl. 501-43.000.

Boutni, Omar M.: *See*—
Tyrell, John A.; Boutni, Omar M.; and Freimiller, Gary L., 4,469,852, Cl. 525-468.000.

Bowman, Kenneth A.; and Zuber, Chester L., to Aluminum Company of America. Method of segregating metallic components. 4,468,847, Cl. 29-403.400.

Boyer, Daniel R., to Keiper U.S.A., Inc. Taumel hinge recliner. 4,469,375, Cl. 297-362.000.

Boyle, Frederick P.: *See*—
Brubaker, Ronald L.; Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,469,284, Cl. 241-25.0TR.

Brabets, Robert I.: *See*—
Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., 4,469,280, Cl. 241-1.000.

Bradley, Harry S., to H & K Bradley (Trailer Equipment) Limited. Brake control mechanisms for use with trailers. 4,469,202, Cl. 188-112.00R.

Bradshaw, Bruce W., to Jackson Jordan, Inc. Railroad track inspection car. 4,468,966, Cl. 73-636.000.

Brahma, Inc.: *See*—
Grote, Daniel; Raymond, Duane; and Mosher, Joseph C., 4,469,317, Cl. 269-69.000.

Branchadell, Jose , to Solvay & Cie. Preform made from a thermoplastic and process for blow-moulding a hollow article from such a preform. 4,469,755, Cl. 428-542.800.

Brandeis University: *See*—
Keehn, Philip M.; and Serino, Robert M., 4,469,574, Cl. 204-159.00R.

Brandes, Wilhelm: *See*—
Jager, Gerhard; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,469,902, Cl. 568-812.000.

Braun, Franz: *See*—
Berger, Dieter; Braun, Franz; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; and Werner, Wolfgang, 4,469,789, Cl. 435-23.000.

Braun, Thomas B.: *See*—
Barnich, Richard G.; Braun, Thomas B.; Lawrence, Lloyd R.; and Schmitt, Peter C., 4,470,042, Cl. 340-721.000.

Brennan, Michael E.: *See*—
Grigsby, Robert A., Jr.; Speranza, George P.; and Brennan, Michael E., 4,469,824, Cl. 521-173.000.
Yeakey, Ernest L.; Zimmerman, Robert L.; and Brennan, Michael E., 4,469,823, Cl. 521-172.000.

Bresson, Richard J., to Eastman Kodak Company. Film light shield. 4,469,423, Cl. 354-288.000.

Brink's Inc.: *See*—
Gunn, William L.; and Preacher, Thomas, Jr., 4,469,113, Cl. 133-3.00E.

Brinton, Keith: *See*—
Krich, Claudia A.; and Brinton, Keith, 4,469,259, Cl. 224-160.000.

British Broadcasting Corporation: *See*—
McNally, Guy W. W., 4,470,109, Cl. 364-200.000.

Brockhaus, Rudolf; and Franke, Hans-Jurgen, to Chemische Werke Huels, AG. Process for the production of methacrylic acid from isobutyraldehyde. 4,469,887, Cl. 562-599.000.

Bronsky, Robert J.; Clark, Dennis B.; and McKeen, Jeffrey A., to Michigan Consolidated Gas Company. Gas shut-off valve. 4,469,124, Cl. 137-464.000.

Brosdetzko, Hubert; Gerster, Wolfgang; and Muller, Klaus, to Deutsche Babcock Aktiengesellschaft. Seal for a tubular mill. 4,469,332, Cl. 277-12.000.

Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft: *See*—
Koch, Wilhelm, 4,468,887, Cl. 49-352.000.

Brown, Forest G., to Sigma Tek Inc. Reciprocating piston apparatus. 4,469,473, Cl. 417-571.000.

Brown, Robert H., to Lucas Industries plc. Mounting arrangements for electrical power circuits. 4,470,002, Cl. 320-1.000.

Brown & Williamson Tobacco Corporation: *See*—
Lewis, Robert T.; and Finn, Everett N., 4,468,912, Cl. 53-137.000.

Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., to Celanese Corporation. Compound filter. 4,469,112, Cl. 131-336.000.

Brownlee, Michael; and Cerami, Anthony, to Rockefeller University, The. Method and system for the controlled release of biologically active substances to a body fluid. 4,469,681, Cl. 424-178.000.

Brubaker, Ronald L.; Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., to Goodyear Tire & Rubber Company, The. Comminuting apparatus with improved rotor and stator recess construction. 4,469,284, Cl. 241-25.0TR.

Bruck, Dieter W.; Jeblick, Werner; and Ruetz, Lothar, to Bayer Aktiengesellschaft. Process for increasing the ozone-resistance of a rubber. 4,469,830, Cl. 524-109.000.

Brunner, Donald W.: *See*—
Brunner, William R.; and Brunner, Donald W., 4,469,080, Cl. 123-595.000.

Brunner, William R.; and Brunner, Donald W. Ignition control bypass cable. 4,469,080, Cl. 123-595.000.

Buckinx, Pol; and Jacobs, Mieke, to GTE Products Corporation. Acoustical wax on a surface wave device. 4,470,026, Cl. 333-194.000.

Budd Company, The: *See*—
Dean, Walter C., II, 4,469,028, Cl. 105-224.00R.

Budinsky, Helmut; and Blasing, Horst, to Schering Aktiengesellschaft. System for removing adhering liquid from objects after a galvanic or chemical surface treatment. 4,469,526, Cl. 134-25.400.

Budzol, Melvin: *See*—
Brubaker, Ronald L.; Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,469,284, Cl. 241-25.0TR.

Bueltjer, Uwe; Horacek, Heinrich; Druschke, Wolfgang; Franzmann, Gernot; Klahr, Erhard; and Foerster, Hans-Juergen, to BASF Aktiengesellschaft. Moisture-curing, storage stable, single-component polyurethane systems. 4,469,831, Cl. 524-112.000.
Buer, Jeffrey J.; and Harris, Byron C. Can counter slide. 4,469,215, Cl. 198-382.000.
Buky, Gabriel R.: *See*—
Armond, Joseph A.; Buky, Gabriel R.; and Patrick, Fred, 4,470,094, Cl. 361-149.000.
Buljan, Sergej-Tomislav: *See*—
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,469,489, Cl. 51-295.000.
Bullard, Terry S. Fan cooler. 4,468,932, Cl. 62-421.000.
Burck, Philip J.: *See*—
Zimmerman, Ronald E.; Burck, Philip J.; and Dunn, Richard L., 4,469,671, Cl. 424-16.000.
Burhans, Frank M., to Boeing Company, The. Composite base structure and end fitting joint and method. 4,469,730, Cl. 428-36.000.
Burla, Diego: *See*—
Castelli, Pier Guido; Lupo, Giorgio; and Burla, Diego, 4,468,984, Cl. 74-796.000.
Burns, Bruce; and Donovan, William, to United States of America, Army. Armor piercing ammunition having interlocking means. 4,469,027, Cl. 102-521.000.
Burns, James A., to Becton Dickinson and Company. Automatic powder dispensing methods and apparatus. 4,469,144, Cl. 141-1.000.
Burnup & Sims Inc.: *See*—
Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., 4,469,306, Cl. 254-134.3FT.
Burress, George T., to Mobil Oil Corporation. Alkylation of aromatic hydrocarbons. 4,469,908, Cl. 585-467.000.
Burroughs Corporation: *See*—
Gerhold, Mark L. C., 4,470,114, Cl. 364-200.000.
Busby, Richard J.: *See*—
Gulberg, Norman B.; and Busby, Richard J., 4,468,858, Cl. 29-764.000.
Busker, Eberhard; Martens, Jurgen; Steigerwald, Regina; and Weigel, Horst, to Degussa Aktiengesellschaft. Optically active proline derivative, process for its production and use. 4,469,875, Cl. 548-532.000.
Butler, Ronald G.; and Lehman, John R., to International Telephone and Telegraph Corporation. Spring safety device. 4,469,016, Cl. 92-128.000.
C. H. Heist Corporation: *See*—
Keeney, Michael G., 4,469,125, Cl. 137-467.000.
Calder, Alan R.: *See*—
Malpas, Jon H.; and Calder, Alan R., 4,469,249, Cl. 222-83.000.
Calderon, Albert. Method for ganifying coal. 4,469,488, Cl. 48-202.000.
Caldwell, Jack H., to Boeing Company, The. Breakaway duct coupling. 4,469,354, Cl. 285-2.000.
California Institute of Technology: *See*—
Westphal, James A.; and Carr, Michael A., 4,468,864, Cl. 33-366.000.
Cameron, A. W. W. Solar heating device. 4,469,087, Cl. 126-422.000.
Cameron Iron Works, Inc.: *See*—
Kellett, Rodney, 4,469,181, Cl. 166-341.000.
Campbell, Alexander F.: *See*—
Perry, Kenneth R.; and Campbell, Alexander F., 4,468,842, Cl. 24-279.000.
Campbell, Jeptha E.; and Gilchrist, James E., to Spiral Systems, Inc. Apparatus and process for preparing quantitative chemical solutions. 4,469,146, Cl. 141-9.000.
Canadian Fram Limited: *See*—
Cook, John E., 4,469,079, Cl. 123-571.000.
Canadian General Electric Company, Ltd.: *See*—
Moore, Victor A., 4,469,971, Cl. 310-214.000.
Canavan, John: *See*—
Asmar, Raymond A.; and Canavan, John, 4,469,107, Cl. 128-681.000.
Candela, Francois. Combined domestic use and space heating electric water heater. 4,469,935, Cl. 219-314.000.
Canon Kabushiki Kaisha: *See*—
Kitamura, Takashi; and Ito, Michio, 4,469,767, Cl. 430-31.000.
Komine, Yoshio, 4,470,077, Cl. 358-335.000.
Maeda, Masaya, 4,470,086, Cl. 360-85.000.
Makita, Masaru, 4,469,455, Cl. 400-171.000.
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,469,417, Cl. 354-404.000.
Tajima, Akira; and Ikemori, Keiji, 4,469,412, Cl. 350-426.000.
Takahashi, Hiroshi, 4,470,037, Cl. 340-365.00R.
Takayanagi, Yoshiaki; Suzuki, Koji; Nagashima, Nao; Ogawa, Hiroshi; Kuroda, Kouki; and Nagahira, Joyji, 4,470,009, Cl. 324-72.000.
Capezzuto, John P., to Dennison Manufacturing Company. Ink pad applicator. 4,469,464, Cl. 401-183.000.
Capitol Products Corporation: *See*—
Cribben, James T., 4,468,905, Cl. 52-172.000.
Capocci, Gerald A.: *See*—
Reid, William J.; and Capocci, Gerald A., 4,469,606, Cl. 252-8.800.
Caratsch, Hans P., to Sinter Limited. Process for the application of solder on printed circuit boards and process for their placement in and removal from this device. 4,469,716, Cl. 427-96.000.
Carcia, Peter F.; Heinsohn, George E.; and Rao, Velliyur N. M., to Du Pont de Nemours, E. I., and Company. Catalytic conversion of formamides to isocyanates. 4,469,640, Cl. 260-453.00P.
Carey, James: *See*—
Guttag, Karl M.; and Carey, James, 4,469,964, Cl. 307-481.000.
Carlick, Daniel J.; and Wasilewski, Olgierd, to Sun Chemical Corporation. Process for the production of dispersions of polymers in non-aqueous vehicles. 4,469,826, Cl. 523-339.000.
Carlson, Daniel C.: *See*—
Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., 4,469,306, Cl. 254-134.3FT.
Carlson, Emery J.: *See*—
Armor, John N.; and Carlson, Emery J., 4,469,816, Cl. 502-333.000.
Carlsson, Jan P. E.: *See*—
Axen, Rolf E. A. V.; Oscarsson, Sven O. H.; Ponterius, Per H. G.; and Carlsson, Jan P. E., 4,469,796, Cl. 436-518.000.
Carr, Michael A.: *See*—
Westphal, James A.; and Carr, Michael A., 4,468,864, Cl. 33-366.000.
Carr, Walter J., Jr., to Westinghouse Electric Corp. Superconducting induction apparatus. 4,470,090, Cl. 361-19.000.
Carson, Gary A.; and Elgas, Roger J., to Cobe Laboratories, Inc. Sampling device for blood oxygenator. 4,469,659, Cl. 422-46.000.
Carter, Ernest E., Jr., to Halliburton Company. Acoustic plug release indicator. 4,468,967, Cl. 73-661.000.
Carus Corporation: *See*—
Mein, Peter G., 4,469,670, Cl. 423-599.000.
Case, George D.; Stiller, Alfred H.; Bekowies, Paul J.; and Panson, Anthony G. Extraction of fossil fuel with guanadine extracting agent. 4,469,583, Cl. 208-8.0LE.
Casino Technology: *See*—
Fish, Leonard A.; and Sverdlik, David, 4,469,245, Cl. 221-225.000.
Castelli, Pier Guido; Lupo, Giorgio; and Burla, Diego, to Centro Ricerche Fiat S.p.A. Epicyclic transmission. 4,468,984, Cl. 74-796.000.
Caswell, Dwight A. Controlled variable compression ratio piston for an internal combustion engine. 4,469,055, Cl. 123-78.00B.
Caterpillar Tractor Co.: *See*—
Linne, Terry D., 4,469,336, Cl. 277-92.000.
Melocik, Kurt B., 4,469,007, Cl. 91-358.00A.
Cattaneo, Pietro. Polyvinyl-alcohol-based thermoplastic composition. 4,469,837, Cl. 524-388.000.
Cavadias, Simeon: *See*—
Amouroux, Jacques; and Cavadias, Simeon, 4,469,508, Cl. 75-10.00R.
Cavalier Products, Inc.: *See*—
Dietrich, Darrel R., 4,469,549, Cl. 156-579.000.
Cavallanti, Virginio: *See*—
Lagana, Vincenzo; and Cavallanti, Virginio, 4,469,492, Cl. 55-49.000.
Cavanagh, John F.; and Cavanagh, Paul A., to Cavanagh & Sons, Inc. Apparatus for manufacturing wafers. 4,469,476, Cl. 425-216.000.
Cavanagh, Paul A.: *See*—
Cavanagh, John F.; and Cavanagh, Paul A., 4,469,476, Cl. 425-216.000.
Cavanagh & Sons, Inc.: *See*—
Cavanagh, John F.; and Cavanagh, Paul A., 4,469,476, Cl. 425-216.000.
Celanese Corporation: *See*—
Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., 4,469,112, Cl. 131-336.000.
Kohn, Rachel S., 4,469,620, Cl. 252-315.300.
Kritchevsky, Gina R., 4,469,842, Cl. 524-593.000.
Shearer, Wilfred L.; Sinker, Stephen M.; and Wolf, Richard A., 4,469,834, Cl. 524-193.000.
Centre d'Etude de l'Energie Nucleaire, "C.E.N." : *See*—
Vandevelde, Leon E. J.; Baetsle, Leon H. J. M.; and Huys, Daniel J. G., 4,469,629, Cl. 252-631.000.
Centro Ricerche Fiat S.p.A.: *See*—
Castelli, Pier Guido; Lupo, Giorgio; and Burla, Diego, 4,468,984, Cl. 74-796.000.
Cerami, Anthony: *See*—
Brownlee, Michael; and Cerami, Anthony, 4,469,681, Cl. 424-178.000.
Cernius, Roger K.; French, Don M.; Singer, Paul A.; Adrian, Donald J.; and Parsons, Donald L., to United States of America, Navy. Pseudo atmospheric noise generator having variable amplitude probability distributions and discharge fine structure. 4,470,022, Cl. 331-78.000.
Cerofolini, Gianfranco, to SGS-Ates Componenti Elettronici S.p.A. Process for making CMOS field-effect transistors with self-aligned guard rings utilizing special masking and ion implantation. 4,468,852, Cl. 29-571.000.
Cetec Corporation: *See*—
Bingaman, Barrett P., 4,470,084, Cl. 360-15.000.
CGR Ultrasonic: *See*—
Eder, Andre , 4,470,017, Cl. 328-116.000.
Chaki, Takao; and Watanabe, Nobuaki, to Clarion Co., Ltd. Pushbutton-operated waveband or station selector. 4,468,976, Cl. 74-10.330.
Champion International Corporation: *See*—
Platt, Sterling B., 4,469,155, Cl. 144-209.00R.
Wright, Robert V.; and Csiszar, Charles, 4,469,258, Cl. 229-43.000.
Chandler Evans Inc.: *See*—
Morrison, Terry, 4,470,118, Cl. 364-431.020.
Chandrasekaran, Swayambu, to Allied Corporation. Cupric salts used in redox polymerization of ethylene chlorotrifluoroethylene copolymer. 4,469,854, Cl. 526-91.000.
Chang, Kuo-Wei. Carbon dioxide sensor. 4,469,562, Cl. 204-1.00T.

Chang, Leroy L.: *See*—
Quinn, John J.; Strom, Ulrich; and Chang, Leroy L., 4,469,977, Cl. 310-334.000.
Chang, Wen-Hsuan: *See*—
Singer, Debra L.; Schimmel, Karl F.; Dowbenko, Rostyslaw; Chau, Michael M.; and Chang, Wen-Hsuan, 4,469,832, Cl. 524-160.000.
Chaplar, Charles, to Christiana Optical Company. Relaxing massager. 4,469,093, Cl. 128-52.000.
Chapman, Dana A.: *See*—
Woods, James W.; St. Denis, John N.; and Chapman, Dana A., 4,469,787, Cl. 435-7.000.
Charboneau, Thomas J., to Texas Instruments Incorporated. Pressure responsive switch with discrete pressure responsive unit. 4,469,923, Cl. 200-83.00P.
Charles, Harold, to Trakka Corporation. Electro conductive polymer compositions and new materials found useful in their preparation. 4,469,637, Cl. 260-429.300.
Charles, John J.; and Nelsen, Suzanne B., to GAF Corporation. Molding composition. 4,469,851, Cl. 525-444.000.
Charlier, Alain G. R.: *See*—
Lepain, Andre; and Charlier, Alain G. R., 4,469,603, Cl. 210-749.000.
Chase, Brian D., to International Business Machines Corporation. Convergence unit for in-line color cathode ray tube. 4,470,029, Cl. 335-210.000.
Chatten, Victor H. Submerged ornamental clock operated by air bubbles. 4,469,447, Cl. 368-65.000.
Chau, Michael M.: *See*—
Singer, Debra L.; Schimmel, Karl F.; Dowbenko, Rostyslaw; Chau, Michael M.; and Chang, Wen-Hsuan, 4,469,832, Cl. 524-160.000.
Chemische Werke Huels, AG: *See*—
Brockhaus, Rudolf; and Franke, Hans-Jurgen, 4,469,887, Cl. 562-599.000.
Grundmann, Raban, 4,469,818, Cl. 521-64.000.
Chemische Werke Huls AG: *See*—
Konietzny, Alfred; Zagefka, Hans-Dieter; Rombusch, Konrad; and Bax, Hanns-Jorg, 4,469,829, Cl. 524-103.000.
Chemische Werke Huls Aktiengesellschaft: *See*—
Disteldorf, Josef; and Hubel, Werner, 4,469,867, Cl. 544-222.000.
Chen, Chia-Ming. Tree foliage extracts and their use in phenol-aldehyde resins. 4,469,858, Cl. 528-129.000.
Chenel, Guy G. False ceiling element. 4,468,900, Cl. 52-64.000.
Cheresnowsky, Michael J.; and Vanderpool, Clarence D., to GTE Products Corporation. Method for producing cobalt metal powder. 4,469,505, Cl. 75-0.5BA.
Chester, Arthur W.; and Chu, Yung-Feng, to Mobil Oil Corporation. Heavy aromatics process. 4,469,909, Cl. 585-481.000.
Chesworth, Peter, to Pilkington Brothers P.L.C. Coating glass. 4,469,045, Cl. 118-718.000.
Chevalier, Claude, to Compagnie Industrielle de Mecanismes. Device for regulating the height of an element and the application thereof in a vehicle seat base. 4,469,301, Cl. 248-371.000.
Chevance, Claude: *See*—
Rampignon, Marc; and Chevance, Claude, 4,469,972, Cl. 310-233.000.
Chevron Research Company: *See*—
Ferm, Richard L., 4,469,586, Cl. 208-48.0AA.
Goodman, Jack E., 4,469,544, Cl. 156-345.000.
Sayles, James A.; and Norwood, William J., III, 4,468,975, Cl. 73-863.810.
Vazin, Gholam R., 4,469,143, Cl. 141-1.000.
Chewning, Marshall T., Jr.; and Borgoyn, Thomas P., to Westinghouse Electric Corp. Modular connector. 4,469,393, Cl. 339-198.0GA.
Chi, Chao S., to Sperry Corporation. Controlled return to A.C. digital magnetic and reproducing system. 4,470,081, Cl. 360-43.000.
Chiang, David; Chu, Mosi; and Manber, Solomon, to MCC Associates. Method of stopping a stepping motor. 4,469,995, Cl. 318-685.000.
Chiarottino, Volmer; Poggio, Cesare; and Reali, Aldo, to Cselt Centro Studi E Laboratori Telecommunicazioni S.p.A. System for distributed priority arbitration among several processing units competing for access to a common data channel. 4,470,110, Cl. 364-200.000.
Chida, Yoshinori; and Tada, Satoru, to Seikosha Co., Ltd. Cassette type ink ribbon device. 4,469,457, Cl. 400-208.000.
Chin-Wun, Su. Back view mirror assembly. 4,469,405, Cl. 350-302.000.
Chiodo, Rudolph J., to Dimedco. Identification locket. 4,468,874, Cl. 40-365.000.
Chisso Corporation: *See*—
Furukawa, Yasuhiko; Sonoda, Hiromu; and Sugihara, Taizo, 4,469,540, Cl. 156-62.400.
Chittenden, Jimmie A., to IBP, Inc. Method for washing animal carcasses. 4,468,839, Cl. 17-51.000.
Chiyoda, Tsutomu: *See*—
Nakamura, Makoto; Chiyoda, Tsutomu; and Hasegawa, Shinichi, 4,469,899, Cl. 568-768.000.
Chloride Group Limited: *See*—
Fletcher, Norman W.; and May, Geoffrey J., 4,469,145, Cl. 141-1.100.
Chodorow, Marvin: *See*—
Shaw, Herbert J.; Chodorow, Marvin; and Stokes, Loren F., 4,469,397, Cl. 350-96.150.
Chou, Der-Jeou; and Maruyama, Tetsuo, to ECD-ANR Energy Conversion Company. Method and apparatus for manufacturing thermoelectric devices. 4,468,854, Cl. 29-573.000.
Chow, William C.: *See*—
Rebaudo, Amadeus P.; Gwerder, Art J.; Chow, William C.; and Ho, Stimson F., 4,470,100, Cl. 361-413.000.
Christensen, Betty L. Cleaning and deburring tool for spent cartridge cases. 4,468,829, Cl. 15-105.000.
Christian, Raymond R.; and Zuercher, Joseph C., to Teletype Corporation. Method of manufacturing an integrated circuit device. 4,468,857, Cl. 29-577.00C.
Christiana Optical Company: *See*—
Chaplar, Charles, 4,469,093, Cl. 128-52.000.
Christopher, Gary. Portable cooler. 4,468,933, Cl. 62-457.000.
Christy, James S.: *See*—
Speer, Stephen R.; Evans, Hugh G.; and Christy, James S., 4,469,078, Cl. 123-564.000.
Chu, Mosi: *See*—
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,469,995, Cl. 318-685.000.
Chu, Yung-Feng: *See*—
Chester, Arthur W.; and Chu, Yung-Feng, 4,469,909, Cl. 585-481.000.
Chuang, Shih S., to Statek Corporation. Microresonator of double-ended tuning fork configuration. 4,469,979, Cl. 310-370.000.
Chupp, John P.; Neumann, Thomas E.; and Miller, Michael J., to Monsanto Company. Preparation of ortho-aminobenzotrifluoride. 4,469,890, Cl. 564-417.000.
Churchill, John E., to U.S. Philips Corporation. Optical apparatus. 4,470,105, Cl. 362-396.000.
Ciarelli, Philip A., Jr.: *See*—
Keeton, Alvin R.; and Ciarelli, Philip A., Jr., 4,469,471, Cl. 417-50.000.
Ciba-Geigy Corporation: *See*—
Pechey, David T.; and Coy, John H., 4,469,515, Cl. 106-23.000.
Reid, William J.; and Capocci, Gerald A., 4,469,606, Cl. 252-8.800.
Steiner, Eginhard; and Martin, Pierre, 4,469,896, Cl. 568-495.000.
Cinzori, Robert J.: *See*—
Kern, Mark T.; and Cinzori, Robert J., 4,469,944, Cl. 250-339.000.
Cisar, James R.; and Mendel, Kilian K., to U.C. Industries. Foam extrusion apparatus and method. 4,469,652, Cl. 264-40.700.
Citizen Watch Company Limited: *See*—
Kato, Toshikiyo, 4,469,449, Cl. 368-239.000.
Clarion Co., Ltd.: *See*—
Chaki, Takao; and Watanabe, Nobuaki, 4,468,976, Cl. 74-10.330.
Clark, David A., to Hughes Tool Company. Self-energizing locking mechanism. 4,469,172, Cl. 166-115.000.
Clark, Dennis B.: *See*—
Bronsky, Robert J.; Clark, Dennis B.; and McKeen, Jeffrey A., 4,469,124, Cl. 137-464.000.
Clark, James R., to Rockwell International Corporation. Emergency and service brake actuator. 4,469,015, Cl. 92-63.000.
Clawson, Arthur R.: *See*—
Wieder, Herman H.; and Clawson, Arthur R., 4,468,851, Cl. 29-571.000.
Clegg, John E. Quadrant conical-lens microscope. 4,469,411, Cl. 350-414.000.
Cleland, Robert K. Liquid metering and mixing aspirator unit. 4,469,137, Cl. 137-893.000.
Clifton, Robert T. V/STOL Aircraft. 4,469,294, Cl. 244-12.300.
CNG Research Company: *See*—
Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., 4,469,280, Cl. 241-1.000.
Coal Industry (Patents) Limited: *See*—
Robinson, Joseph G.; and Barnes, David I., 4,469,814, Cl. 502-263.000.
Cobe Laboratories, Inc.: *See*—
Carson, Gary A.; and Elgas, Roger J., 4,469,659, Cl. 422-46.000.
Cocco, Vincent L.; and Norris, Philip R., to Polaroid Corporation. Photographic film processing apparatus. 4,469,425, Cl. 354-310.000.
Coco, Eugene E.; and Scott, Willie L. Method and apparatus for tanning or UV treatment. 4,469,951, Cl. 250-494.100.
Cody, Michael J.: *See*—
Marcus, Konrad H.; and Cody, Michael J., 4,469,365, Cl. 296-37.700.
Coelho, Wagner C.: *See*—
Abdel-Hehim, Hosam A. A.; Coelho, Wagner C.; and Soares, Gloria M. G., 4,469,504, Cl. 71-37.000.
Coffey, Dennis K. Distributed switching network. 4,470,140, Cl. 370-86.000.
Cohen, Eli. Solar tracking unit. 4,469,938, Cl. 250-203.00R.
Coil, Stanley F. Tiltable three-wheeled vehicle. 4,469,344, Cl. 280-269.000.
Cole, James B., to Boeing Company, The. Extendible airfoil cable drum track assembly. 4,469,297, Cl. 244-215.000.
Cole National Corporation: *See*—
Sorrells, Frank D., 4,468,896, Cl. 51-217.00L.
Coleco Industries, Inc.: *See*—
Nugent, James H.; and Berger, Hans S., 4,470,012, Cl. 324-168.000.
Coleman, Carl R.; and Hughes, Kenneth E., to Battelle Memorial Institute. Suture device. 4,469,101, Cl. 128-334.00R.
Colgate-Palmolive Company: *See*—
Ramachandran, Pallassana N.; and Grand, Paul S., 4,469,605, Cl. 252-8.700.
Trombone, Thomas J., 4,469,627, Cl. 252-548.000.
Colson, Charles A.; Cornelis, Pierre E.; Digneffe, Colette S.; and Walon, Corinne, to CPC International Inc. Genetically engineered microorganisms for massive production of amylolytic enzymes and process for preparing same. 4,469,791, Cl. 435-253.000.

Combustion Engineering, Inc.: *See*—
Sublette, Kerry L.; and Prestridge, Floyd L., 4,469,582, Cl. 204-302.000.

Commissariat a l'Energie Atomique: *See*—
Allemand, Robert; Gagelin, Jean-Jacques; and Tournier, Edmond, 4,469,947, Cl. 250-385.000.

Communications Satellite Corporation: *See*—
Motl, Richard C.; Kroll, Robert T., Jr.; and Assal, Tsvi F., 4,470,148, Cl. 375-113.000.
Yatsuzuka, Yohtaro; and Suyderhoud, Henri G., 4,470,146, Cl. 375-30.000.

Compagnie de Construction Mechanique Sulzer: *See*—
Leroy, Daniel; and Gazagne, Laurent, 4,469,474, Cl. 418-217.000.

Compagnie Francaise de Raffinage: *See*—
Lemoine, Guy; Lucas, Robert; and Vernon, Michel, 4,469,819, Cl. 521-79.000.

Compagnie Industrielle de Mecanismes: *See*—
Chevalier, Claude, 4,469,301, Cl. 248-371.000.

Compagnie Industrielle des Mecanismes: *See*—
Rampignon, Marc; and Chevance, Claude, 4,469,972, Cl. 310-233.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
de Bergh, Guy; and Spiteri, Jean-Claude, 4,469,916, Cl. 179-2.0DP.
Petit, Andre ; and Jamet, Daniel, 4,469,385, Cl. 339-14.00R.

Compagnie Lyonnaise de Transmissions Optiques: *See*—
Hakoun, Roland, 4,469,400, Cl. 350-96.210.

Concentration Specialists, Inc.: *See*—
Johnson, Wallace E., 4,468,930, Cl. 62-71.000.

Condet, Claude, to Societe dite: Automobiles Peugeot; and Societe dite: Automobiles Citroen. Device for fixing a tank on a support structure. 4,469,340, Cl. 280-5.00A.

Congoleum Corporation: *See*—
Lieptz, Nathan S., 4,468,994, Cl. 83-414.000.

Conradi, Robert A.: *See*—
Anderson, Bradley D.; and Conradi, Robert A., 4,469,689, Cl. 424-243.000.

Cook, Albert N.; and Daman, Louis F., to Singer Company, The. Electrically isolating sewing machine motor mount. 4,469,036, Cl. 112-220.000.

Cook, Henry F.: *See*—
Sutherland, James F.; and Cook, Henry F., 4,470,041, Cl. 340-644.000.

Cook International, Inc.: *See*—
Hill, James J.; and Marven, Al, 4,469,255, Cl. 222-649.000.

Cook, John E., to Canadian Fram Limited. Exhaust gas recirculation (EGR) system. 4,469,079, Cl. 123-571.000.

Cooke, Richard C., Jr., to Acme Resin Corporation. Silicate treatment of impure silica sands. 4,469,517, Cl. 106-38.300.

Coon, Clifford L.; and Simon, Robert L., to Baxter Travenol Laboratories, Inc. Method of synthesizing fluoromethylhexafluoroisopropyl ether. 4,469,898, Cl. 568-683.000.

Cooper, Richard R., to Imperial Chemical Industries PLC. Ethylene copolymerization using diluent gas. 4,469,855, Cl. 526-106.000.

Cooper Tire & Rubber Company: *See*—
Klose, Karl W.; and Benjamin, Gary H., 4,469,546, Cl. 156-406.200.

Copeland Corporation: *See*—
Simpson, Francis M., 4,469,126, Cl. 137-543.190.

Cordis Corporation: *See*—
Peers-Trevarton, Charles A., 4,469,104, Cl. 128-419.00P.

Cormack, Robert W.: *See*—
Pfister, Clifford O.; Strand, Alan L.; and Cormack, Robert W., 4,469,287, Cl. 242-67.30R.

Cornelis, Pierre E.: *See*—
Colson, Charles A.; Cornelis, Pierre E.; Digneffe, Colette S.; and Walon, Corinne, 4,469,791, Cl. 435-253.000.

Corning Glass Works: *See*—
Boudot, Jean E.; and Mazeau, Jean P., 4,469,800, Cl. 501-43.000.
Dumbaugh, William H., Jr., 4,469,799, Cl. 501-32.000.

Cosden Technology, Inc.: *See*—
Hahn, Granville J.; and Rutledge, Raleigh N., 4,469,651, Cl. 264-40.600.
Lepain, Andre; and Charlier, Alain G. R., 4,469,603, Cl. 210-749.000.
Watson, James M., 4,469,558, Cl. 202-154.000.

Cosmo, Nicola: *See*—
Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, 4,469,389, Cl. 339-75.0MP.

Cosse, Lionel, to Biscuiterie Nantaise - BN. Method and device for dividing a row of identical solid products. 4,469,218, Cl. 198-438.000.

Cosse, Lionel, to Biscuiterie Nantaise - BN. Method and installation for regularizing the transfer of identical solid products. 4,469,219, Cl. 198-460.000.

Costa, Ralph J. Delivery mechanism for a vending machine. 4,469,242, Cl. 221-4.000.

Cotten, H. Wayne: *See*—
Hays, Laurence W.; and Cotten, H. Wayne, 4,469,570, Cl. 204-67.000.

Cotter, Byron R.: *See*—
Tang, David Y.; Cotter, Byron R.; and Goetz, Frederick J., 4,469,893, Cl. 568-424.000.

Cottingham, Donald T.: *See*—
Billingsley, James D.; and Cottingham, Donald T., 4,470,151, Cl. 382-44.000.

Cotton, James D.: *See*—
Ito, John M.; and Cotton, James D., 4,469,243, Cl. 221-34.000.

Coutin, Pierre F.: *See*—
Duclos, Didier A.; and Coutin, Pierre F., 4,468,843, Cl. 24-642.000.

Covitch, Michael J.; DeRespiris, Donald L.; Benezra, Leo L.; and Vauss, Elvin M., to Diamond Shamrock Corporation. Solid polymer electrolytes and electrode bonded with hydrophylic fluorocopolymers. 4,469,579, Cl. 204-283.000.

Cowan, James J.; and Holland, Andrew B., to Polaroid Corporation. Laser apodizing filter. 4,469,407, Cl. 350-314.000.

Cowen, Steven J.; Daughtry, James H.; Young, Christopher M.; and Redfern, John T., to United States of America, Navy. Method of making an undersea, high pressure bulkhead penetrator for use with fiber optic cables. 4,469,399, Cl. 350-96.200.

Cowles, John H., Sr., to Torrington Company, The. Linear movement anti-friction bearing. 4,469,380, Cl. 308-6.00C.

Cox, Charles W., to General Electric Company. Automotive inner-bulb assembly. 4,470,104, Cl. 362-211.000.

Coy, John H.: *See*—
Pechey, David T.; and Coy, John H., 4,469,515, Cl. 106-23.000.

Coyle, William E.; Gunnerson, Robert E.; and Shoults, Richard W., to Sun-Maid Growers of California. Foam separator. 4,469,591, Cl. 209-170.000.

CPC International Inc.: *See*—
Colson, Charles A.; Cornelis, Pierre E.; Digneffe, Colette S.; and Walon, Corinne, 4,469,791, Cl. 435-253.000.

Crean, Gerald J., to Wang Laboratories, Inc. Print wheel mounting arrangement for print head and ribbon cartridge assembly. 4,469,454, Cl. 400-144.200.

Creative Metal Forming, Inc.: *See*—
Harrison, Edwin L.; and Retzlaff, Ronald D., 4,468,875, Cl. 42-50.000.

Creative Research and Manufacturing Inc.: *See*—
Mehl, Donald N., 4,469,109, Cl. 128-753.000.

Creim, James M., to Cumberland Valley Metals, Inc. Article rack and cart assembly. 4,469,341, Cl. 280-47.260.

Cretex Companies, Inc., The: *See*—
Odill, Frank J.; and Anderson, David E., 4,469,467, Cl. 404-25.000.

Cribben, James T., to Capitol Products Corporation. Insulated glass spacer. 4,468,905, Cl. 52-172.000.

Crichlow, Charles A.: *See*—
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 4,469,889, Cl. 564-254.000.

Cripps, Peter K., to GTE Automatic Electric Inc. Wireless telephone system with high level dial pulse signalling. 4,469,918, Cl. 179-2.0EA.

Cronan, Walter I. Conveying apparatus. 4,469,229, Cl. 209-544.000.

Cronce, Gary: *See*—
Stapleton, Craig A.; Rasor, William; and Cronce, Gary, 4,469,261, Cl. 224-321.000.

Cronin, Donald L. Electronic ballast having emitter coupled transistors and bias circuit between secondary winding and the emitters. 4,469,988, Cl. 315-209.00R.

Crook, Richard D. Trailer tongue stand. 4,469,348, Cl. 280-475.000.

Crow, Robert W.; Vinzant, Michael B.; and Schwendemann, Kenneth L., to Otis Engineering Corporation. Safety system. 4,469,179, Cl. 166-319.000.

Crucible, Inc.: *See*—
Holtz, Frederick C., Jr., 4,469,514, Cl. 75-236.000.

Crump, Druce K.; Wilson, David A.; and Gatton, Gary D., to Dow Chemical Company, The. Scale control in flue gas desulfurization. 4,469,663, Cl. 423-242.000.

Crump, Robert F. Outside rescue elevator system for high-rise buildings. 4,469,198, Cl. 187-8.000.

Cryderman, W. G.: *See*—
James, James R.; and Cryderman, W. G., 4,469,130, Cl. 137-606.000.

Cselt Centro Studi E Laboratori Telecommunicazioni S.p.A.: *See*—
Chiarottino, Volmer; Poggio, Cesare; and Reali, Aldo, 4,470,110, Cl. 364-200.000.

Csiszar, Charles: *See*—
Wright, Robert V.; and Csiszar, Charles, 4,469,258, Cl. 229-43.000.

Csontos, Imre. Railway turnouts. 4,469,299, Cl. 246-435.00R.

Csutak nee Jakucs, Erzsebet: *See*—
Kis-Tamas, Attila; Mikite, Gyula; Csutak nee Jakucs, Erzsebet; and Kocsis, Laszlo , 4,469,703, Cl. 424-311.000.

CTS Corporation: *See*—
Bloom, Terry R.; and Ellis, Marion E., 4,469,044, Cl. 118-665.000.

Cukier, Samuel; and Kremer, Henry A. F. L. Oxidation resistant pitches. 4,469,585, Cl. 208-39.000.

Culture Tek Corporation: *See*—
Malinoff, Donald, 4,468,974, Cl. 73-863.320.

Cumberland Valley Metals, Inc.: *See*—
Creim, James M., 4,469,341, Cl. 280-47.260.

Cuprum, S.A.: *See*—
Mireles-Saldivar, Jose M., 4,468,995, Cl. 83-620.000.

Curtis, Ralston; and Papanu, Steven C., to Zoecon Corporation. Pesticidal formulation. 4,469,675, Cl. 424-78.000.

Curtiss, William P.; and Sharp, Gordon P., to IMEC Corporation. Self generative PWM voltage source inverter induction motor drive. 4,469,997, Cl. 318-729.000.

Cyberex, Inc.: *See*—
Resch, Robert J.; Hazony, Dov; and Berris, Richard E., Jr., 4,470,001, Cl. 318-810.000.

Daab, Heinz, to Honeywell GmbH. Digital regulating and/or control system. 4,470,107, Cl. 364-140.000.

Daga, Andrew. System for forming structural concrete. 4,468,911, Cl. 52-743.000.

D'Aguanno, Steven R.: *See*—
Ulrich, Hans; Eddins, Fred D.; Reinertsen, Tormod K.; D'Aguanno, Steven R.; and D'Ambra, Americo, Jr., 4,469,327, Cl. 273-1.0GG.

Daimler-Benz Aktiengesellschaft: *See*—
Grabner, Christian; Heimbrodt, Klaus-Jurgen; and Feichtiger, Dieter, 4,468,942, Cl. 70-264.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Yamada, Mitsuhiko, 4,470,074, Cl. 358-287.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Yoshimoto, Takeshi; and Tsuda, Masanari, 4,470,075, Cl. 358-302.000.

Dallas, William J., to U.S. Philips Corporation. Short-exposure tomosynthesis apparatus for the formation of layer images with a low artefact-content. 4,469,440, Cl. 356-71.000.

Daman, Louis F.: *See*—
Cook, Albert N.; and Daman, Louis F., 4,469,036, Cl. 112-220.000.

D'Amato, Richard, to U.S. Windpower, Inc. Windmill support structure. 4,469,956, Cl. 290-55.000.

D'Ambra, Americo, Jr.: *See*—
Ulrich, Hans; Eddins, Fred D.; Reinertsen, Tormod K.; D'Aguanno, Steven R.; and D'Ambra, Americo, Jr., 4,469,327, Cl. 273-1.0GG.

Danieli & C. Officine Meccaniche SpA: *See*—
Klaucic, Luciano, 4,469,163, Cl. 164-446.000.

Danielson, Glen; and Riley, Clyde H., to H. B. Zachry Company. Repetitive combustion coating apparatus. 4,469,722, Cl. 427-423.000.

Danielson, Richard D.; and Prokop, Robert A., to Minnesota Mining and Manufacturing Company. Detection of articles. 4,469,623, Cl. 252-408.100.

Data Motion, Inc.: *See*—
Seitz, Alan F., 4,469,263, Cl. 226-74.000.
Seitz, Karl G., 4,469,262, Cl. 226-74.000.

Daughtry, James H.: *See*—
Cowen, Steven J.; Daughtry, James H.; Young, Christopher M.; and Redfern, John T., 4,469,399, Cl. 350-96.200.

Davi, Samantha K. Apparatus for and method of utilizing energy to excise pathological tissue. 4,469,098, Cl. 128-303.100.

David, Klaus. Cleaning apparatus for machine spindles. 4,468,834, Cl. 15-246.000.

Davis, Ralph A.; and Stauffer, Randy C., to Dow Chemical Company, The. Oxidizing medium for dyes. 4,469,617, Cl. 252-186.210.

Davis, Richard W. Lock box. 4,468,940, Cl. 70-63.000.

Davy-Loewy Limited: *See*—
Foss, Alan, 4,468,944, Cl. 72-35.000.

Dean, Robert A.: *See*—
Fair, David L.; Woodard, Kenneth E., Jr.; and Dean, Robert A., 4,469,571, Cl. 204-98.000.

Dean, Walter C., II, to Budd Company, The. Primary suspension system for a railway car with vertical and longitudinal compliance. 4,469,028, Cl. 105-224.00R.

Deaver, Dann T., to Ventre Corporation. Louver construction. 4,469,366, Cl. 296-97.00A.

De Baets, Micheal C.; and Sperinde, John M., to Oximetrix, Inc. Optical connector for use during photometric analysis. 4,469,398, Cl. 350-96.200.

DeBaun, Jack R.; Pallos, Ferenc M.; Matsumoto, Kent E.; and Ross, John H., to Stauffer Chemical Company. Pyrrolid-3-en-2-ones and pharmaceutical methods of use thereof. 4,469,701, Cl. 424-267.000.

de Bergh, Guy; and Spiteri, Jean-Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Method and apparatus for detecting signalling and data signals on a telephone channel. 4,469,916, Cl. 179-2.0DP.

Deborski, Gary A.; and Lefevre, Joseph D., to Dow Chemical Company, The. Method of making an improved internally supported electrode. 4,469,580, Cl. 204-284.000.

Deere & Company: *See*—
Fox, Robert E.; and Reece, Wendell D., 4,469,185, Cl. 172-540.000.
Nelson, Roger J., 4,469,014, Cl. 92-13.000.
Vieth, Harold F., 4,468,983, Cl. 74-784.000.

Degussa Aktiengesellschaft: *See*—
Busker, Eberhard; Martens, Jurgen; Steigerwald, Regina; and Weigel, Horst, 4,469,875, Cl. 548-532.000.
Drauz, Karlheinz; Kleemann, Axel; Martens, Jurgen; Scherberich, Paul; and Effenberger, Franz, 4,469,876, Cl. 548-535.000.

Deibel, Erwin: *See*—
Schaarschmidt, Joachim; and Deibel, Erwin, 4,469,362, Cl. 294-116.000.

Delahanty, Dennis M. Conversion of roof top surfboard carriers to improved ski carriers. 4,469,260, Cl. 224-315.000.

DelCoco, Robert J.: *See*—
Sun, Shan C.; and DelCoco, Robert J., 4,470,091, Cl. 361-20.000.

De Luca, Paul V.; and Atun, Albert, to Porta Systems Corp. Wall mounted distribution frame for telephone subscriber locations. 4,470,102, Cl. 361-428.000.

DelValle, Frank: *See*—
Katcher, Jay H.; and DelValle, Frank, 4,469,712, Cl. 426-579.000.

DeMarinis, Robert M., to SmithKline Beckman Corporation. Allyloxy- and allylthio-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,469,634, Cl. 260-239.0BB.

Demmer, Walter: *See*—
Wolber, Jorg; Kunze, Dieter J.; Hahn, Friedrich E.; and Demmer, Walter, 4,470,066, Cl. 358-171.000.

Dempster Industries Inc.: *See*—
Blumer, John E.; and Linsenmeyer, Arthur F., 4,469,210, Cl. 193-22.000.

Dennison Manufacturing Company: *See*—
Capezzuto, John P., 4,469,464, Cl. 401-183.000.

DeRespiris, Donald L.: *See*—
Covitch, Michael J.; DeRespiris, Donald L.; Benezra, Leo L.; and Vauss, Elvin M., 4,469,579, Cl. 204-283.000.

DeSalve, Dennis W., to United Aircraft Products, Inc. Thermostatic device with fail-safe capability. 4,469,275, Cl. 236-93.00A.

Deschatrettes, Gerard; and Tirel, Rene , to Glaenzer Spicer. Machine for machining and in particular grinding cylindrical surfaces. 4,468,893, Cl. 51-105.00R.

Dessau, Ralph M., to Mobil Oil Corporation. Selective sorption of linear fused polynuclear aromatic compounds by zeolites. 4,469,913, Cl. 585-828.000.

Deubel, Reinhold: *See*—
Schneider, Manfred; Deubel, Reinhold; and Schunck, Rainer, 4,469,516, Cl. 106-23.000.

Deussen, Werner. Tamperproof container closure. 4,469,234, Cl. 215-252.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Note group selectable musical effects in an electronic musical instrument. 4,468,996, Cl. 84-1.010.

Deutsche Babcock Aktiengesellschaft: *See*—
Brosdetzko, Hubert; Gerster, Wolfgang; and Muller, Klaus, 4,469,332, Cl. 277-12.000.

Deutsche Thomson-Brandt GmbH: *See*—
Favreau, Jean-Claude; Hartmann, Uwe; and Mai, Udo, 4,469,992, Cl. 315-371.000.

De Vincentiis, Leonardo, to Ausonia Farmaceutici s.r.l. Hexamethylenetetramine-N-acetyl-thiazolidine-4-carboxylate, a process for its preparation and a pharmaceutical composition containing it. 4,469,691, Cl. 424-249.000.

DeVore, William J.: *See*—
Veneklasen, Lee H.; and DeVore, William J., 4,469,948, Cl. 250-396.0ML.

DeWald, Horace A., to Warner-Lambert Company. Alkylimidazo[1,2-c]pyrazolo[3,4-e]pyrimidines. 4,469,868, Cl. 544-251.000.

DeWoolfson, Bruce H.; Flowers, Stanley; and Freund, Robert F., to Environmental Products Corporation. Container collection apparatus with piston-actuated crusher. 4,469,212, Cl. 194-4.00C.

Dexheimer, Edward M.; Anchor, Michael J.; Thir, Basil; and Eisenstein, Stephen E., to BASF Wyandotte Corporation. Polyurethane prepared from a polyoxyalkylene containing an oxidation inhibiting amount of a benzoic acid salt. 4,469,820, Cl. 521-125.000.

Diamond Shamrock Corporation: *See*—
Bennett, John E.; Harney, David E.; and Mitchell, Thomas A., 4,469,761, Cl. 429-50.000.
Covitch, Michael J.; DeRespiris, Donald L.; Benezra, Leo L.; and Vauss, Elvin M., 4,469,579, Cl. 204-283.000.

DiBella, Eugene P., to Borg-Warner Chemicals, Inc. Process for the production of triaryl phosphates. 4,469,644, Cl. 260-985.000.

Didde Graphic Systems Corporation: *See*—
Howard, John B.; and Gladow, Dean E., 4,469,266, Cl. 226-106.000.

Diehl GmbH & Co.: *See*—
Kruger, Tilmann; and Effenberger, Heinz, 4,469,957, Cl. 307-200.00A.

Diemoulders Proprietary Limited: *See*—
Malpas, Jon H.; and Calder, Alan R., 4,469,249, Cl. 222-83.000.

Diesel Kiki Company, Ltd.: *See*—
Yuzawa, Yasutaka, 4,469,066, Cl. 123-380.000.

Dietrich, Darrel R., to Cavalier Products, Inc. Heat seal apparatus. 4,469,549, Cl. 156-579.000.

Digneffe, Colette S.: *See*—
Colson, Charles A.; Cornelis, Pierre E.; Digneffe, Colette S.; and Walon, Corinne, 4,469,791, Cl. 435-253.000.

Dimedco: *See*—
Chiodo, Rudolph J., 4,468,874, Cl. 40-365.000.

Dimmick, James O., to Bell Telephone Laboratories, Incorporated. Circuitry for allocating access to a demand-shared bus. 4,470,112, Cl. 364-200.000.

Di Muzio, Nicola: *See*—
Rivetti, Franco; Romano, Ugo; and Di Muzio, Nicola, 4,469,897, Cl. 568-650.000.

Dirnberger, Linus R.: *See*—
Polis, Marjorie J.; Dirnberger, Linus R.; and Kersen, Matthew F., 4,469,199, Cl. 187-29.000.

Disbrow, John R.; Eiselen, Everett T.; Findley, Gerald I.; Luning, Stephen G.; and Wang, David T., to International Business Machines Corporation. Page modification method in a printer subsystem of the partial page buffer composing type. 4,470,129, Cl. 364-900.000.

Dischert, Robert A.; and Walter, James M., to RCA Corporation. Multiplier for digital video signals using a cascade of signal-selectable memories. 4,470,125, Cl. 364-760.000.

Disteldorf, Josef; and Hubel, Werner, to Chemische Werke Huls Aktiengesellschaft. Isocyanatoisocyanurates. 4,469,867, Cl. 544-222.000.

DiVincenzo, Costantino L., to Firestone Tire & Rubber Company, The. Electroacoustic method for nondestructively monitoring the internal temperature of objects. 4,469,450, Cl. 374-119.000.

Dixon, John W. Above ground gasoline storage apparatus. 4,469,129, Cl. 137-587.000.

Doak, Kenneth W. Blends of a rubber-modified polyvinyl chloride resin and rubber-modified polymer of a vinyl aromatic monomer and unsaturated dicarboxylic acid anhydride monomer. 4,469,844, Cl. 525-71.000.

Doak, Kenneth W. Blends of a rubber-modified polyvinyl chloride resin and a polymer of a vinyl aromatic monomer and unsaturated dicarboxylic acid anhydride monomer. 4,469,845, Cl. 525-71.000.
Dockendorf, William G.: *See*—
Rapp, Harold; and Dockendorf, William G., 4,469,708, Cl. 426-103.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Eger, Georg, 4,469,368, Cl. 296-188.000.
Dr. Johannes Heidenhain GmbH: *See*—
Schmitt, Walter, 4,469,940, Cl. 250-214.00R.
Schmitt, Walter, 4,469,958, Cl. 307-246.000.
Dodge, Paul D., to Tennant Company. Membrane remover/etchant. 4,469,525, Cl. 134-3.000.
Doering, Arlin B.; and Lindberg, Terrance D., to Minnesota Mining and Manufacturing Company. Magnetic recording disk cartridge. 4,470,083, Cl. 360-97.000.
Doerr, John F.; and Miller, Richard L., to Doerr, John F. Safety light warning system for vehicles and the like. 4,470,036, Cl. 340-66.000.
Dolan, John O. Method and apparatus for increasing a sprinter's speed. 4,469,324, Cl. 272-70.000.
Dominguez, Richard J. G., to Texaco Inc. Rim elastomers with improved catalyst efficiency. 4,469,657, Cl. 264-328.600.
Donig, Gerhard, to Siemens Aktiengesellschaft. Coil excitation arrangement for producing a pulse-shaped field of constant intensity. 4,470,095, Cl. 361-153.000.
Donovan, William: *See*—
Burns, Bruce; and Donovan, William, 4,469,027, Cl. 102-521.000.
Double E Company Inc.: *See*—
Pontes, Virgil M., 4,469,288, Cl. 242-72.100.
Dover Corporation: *See*—
Hanlon, Paul C., 4,469,017, Cl. 92-168.000.
Dow Chemical Company, The: *See*—
Crump, Druce K.; Wilson, David A.; and Gatton, Gary D., 4,469,663, Cl. 423-242.000.
Davis, Ralph A.; and Stauffer, Randy C., 4,469,617, Cl. 252-186.210.
Deborski, Gary A.; and Lefevre, Joseph D., 4,469,580, Cl. 204-284.000.
Hinkamp, Paul E., 4,469,608, Cl. 252-8.55D.
Ishibe, Nobuyuki; Richey, Warren F.; and Wing, Milton S., 4,469,520, Cl. 106-291.000.
Jernigan, Robert T., 4,468,929, Cl. 60-641.200.
Morris, Thomas E., 4,469,720, Cl. 427-345.000.
Schmidt, Donald L., 4,469,836, Cl. 524-376.000.
Snyder, Kenneth L., Jr.; Keskey, William H.; and Sarkar, Nitis, 4,469,611, Cl. 252-75.000.
Dowbenko, Rostyslaw: *See*—
Singer, Debra L.; Schimmel, Karl F.; Dowbenko, Rostyslaw; Chau, Michael M.; and Chang, Wen-Hsuan, 4,469,832, Cl. 524-160.000.
Dowling, Donald J.: *See*—
Kusetka, Robert E.; and Dowling, Donald J., 4,469,451, Cl. 374-136.000.
Dragerwerk Aktiengesellschaft: *See*—
Schwartz, Willi, 4,468,969, Cl. 73-744.000.
Drapp, Joseph W. Transformer. 4,470,006, Cl. 323-307.000.
Drauz, Karlheinz; Kleemann, Axel; Martens, Jurgen; Scherberich, Paul; and Effenberger, Franz, to Degussa Aktiengesellschaft. Process for the production of L-proline. 4,469,876, Cl. 548-535.000.
Drewitz, Hans J.: *See*—
Hagin, Faust; and Drewitz, Hans J., 4,469,187, Cl. 180-14.200.
Drexler, Rudolph A., to Simmonds Precision Products, Inc. Apparatus for the mounting and wiring of printed circuit boards. 4,470,101, Cl. 361-415.000.
Driear, Joseph R., to Kelley Company Inc. Method of making lambda beams. 4,468,946, Cl. 72-379.000.
Driesmans, Jean, to V.F.M. Verkoop en Fabrikatie van Metaalprodukten Naamloze Vennootscap. Grille for burning solid fuels in stoves, hearths, ovens, and others. 4,469,085, Cl. 126-160.000.
Driscoll, Mark D.: *See*—
Keech, David A.; Kirchner, Robert T.; Vander Wal, Nicholas M.; Sorenson, John E.; and Driscoll, Mark D., 4,468,962, Cl. 73-200.000.
Drumac Holding Pty. Limited: *See*—
Drury, Norman K., 4,469,360, Cl. 293-102.000.
Drury, Norman K., to Drumac Holding Pty. Limited. Vehicle bull-bar. 4,469,360, Cl. 293-102.000.
Druschke, Wolfgang: *See*—
Bueltjer, Uwe; Horacek, Heinrich; Druschke, Wolfgang; Franzmann, Gernot; Klahr, Erhard; and Foerster, Hans-Juergen, 4,469,831, Cl. 524-112.000.
D'Silva, Themistocles D. J., to Union Carbide Corporation. Pesticidal cyano enol phosphates. 4,469,688, Cl. 424-210.000.
Duclos, Didier A.; and Coutin, Pierre F., to R. Alkan & Cie. Coupling device for a belt with automatic snap-locking and ejection. 4,468,843, Cl. 24-642.000.
Dugan, Charles; and Dugan, Timothy, to Farm Fresh Shrimp Corporation. Method and apparatus for rearing post-larvae shrimp. 4,469,048, Cl. 119-2.000.
Dugan, Timothy: *See*—
Dugan, Charles; and Dugan, Timothy, 4,469,048, Cl. 119-2.000.
Dumbaugh, William H., Jr., to Corning Glass Works. Easily meltable dense opal glasses. 4,469,799, Cl. 501-32.000.
Dunn, Richard L.: *See*—
Zimmerman, Ronald E.; Burck, Philip J.; and Dunn, Richard L., 4,469,671, Cl. 424-16.000.
Duphar International Research B.V.: *See*—
Lissenburg, Rokus C. D.; and Kamstra, Paulus R., 4,469,482, Cl. 604-187.000.
Du Pont de Nemours, E. I., and Company: *See*—
Betsill, Harry E., 4,470,046, Cl. 340-825.230.
Carcia, Peter F.; Heinsohn, George E.; and Rao, Velliyur N. M., 4,469,640, Cl. 260-453.00P.
Ganci, James B., 4,469,523, Cl. 106-309.000.
Gretzinger, James; and Rackley, Robert L., 4,469,739, Cl. 428-198.000.
Grot, Walther G.; Rivers, Joseph T.; and Silva, Raimund H., 4,469,744, Cl. 428-246.000.
Held, Robert P., 4,469,625, Cl. 252-514.000.
Himelreich, Louis E., Jr., 4,469,738, Cl. 428-198.000.
Hiss, Timothy G., 4,469,743, Cl. 428-215.000.
Hoh, George L.; and Vassallo, Donald A., 4,469,754, Cl. 428-476.300.
Khan, Ausat A.; and Stewart, Charles W., 4,469,846, Cl. 525-72.000.
Lee, Ross A., 4,469,774, Cl. 430-270.000.
O'Neil, James W., 4,469,777, Cl. 430-315.000.
Verhoeven, Laurentius M., 4,469,394, Cl. 339-221.00R.
Durant, Will G. Non-influencing spout for a weighing feed system. 4,469,147, Cl. 141-83.000.
Duret, Maurice L.; and Nicolas, Yves M. L., to Societe Nationale Industrielle Aerospatial. Connecting device and method. 4,469,356, Cl. 285-332.000.
Dyckerhoff & Widmann Aktiengesellschaft: *See*—
Jungwirth, Dieter; Schnitzler, Lorenz; Mannhart, Alto; and Wlodkowski, Johann, 4,469,756, Cl. 428-592.000.
Dynamic Disk, Inc.: *See*—
Wray, Daniel X., 4,469,566, Cl. 204-23.000.
Dyson Refractories Limited: *See*—
Sambrook, Rodney M.; and Ross, Julian R. H., 4,469,815, Cl. 502-303.000.
E. R. Squibb & Sons, Inc.: *See*—
Ita, Callixtus E.; Heald, Anthony F.; and Egli, Peter, 4,469,870, Cl. 546-199.000.
E.T.A., S.A., Fabriques d'Ebauches: *See*—
Muller, Jacques, 4,469,448, Cl. 368-196.000.
Eastman Kodak Company: *See*—
Adin, Anthony; Kovacs, Csaba A.; and Machiele, Delwyn E., 4,469,773, Cl. 430-222.000.
Bresson, Richard J., 4,469,423, Cl. 354-288.000.
Harris, James E., 4,468,845, Cl. 28-283.000.
Wrobel, Joseph J., 4,470,054, Cl. 346-137.000.
Eaton Corporation: *See*—
Anderson, Patrick J.; and Forschler, Robert D., 4,469,120, Cl. 137-85.000.
Jaeschke, Ralph L., 4,469,968, Cl. 310-105.000.
Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., 4,470,027, Cl. 335-16.000.
Speranza, Donald, 4,469,974, Cl. 310-316.000.
Swenson, Kenneth S., 4,469,999, Cl. 318-798.000.
Eaton, James W.; and Narhi, Erland D., to Masonite Corporation. Building panel. 4,468,903, Cl. 52-105.000.
Eaton, James W., to Masonite Corporation. Building panel. 4,468,909, Cl. 52-541.000.
Ebata, Toshikazu: *See*—
Tomita, Makoto; Tanaka, Tadanori; and Ebata, Toshikazu, 4,469,349, Cl. 280-665.000.
Ebeling, Fred: *See*—
Spiegelberg, Karl; Hoffmann, Herbert; Jeske, Helmfried; Kolm, Alexander; and Ebeling, Fred, 4,469,932, Cl. 219-121.0PA.
Ebert, Frederick J., to United Technologies Corporation. Multi-frequency vibration controller using fluid-filled cantilever beam for vibration excitation & absorbtion. 4,470,121, Cl. 364-508.000.
Ebhardt, Horst: *See*—
Ruff, Reinhard; Hayda, Friedrich; and Ebhardt, Horst, 4,469,981, Cl. 315-205.000.
ECD-ANR Energy Conversion Company: *See*—
Chou, Der-Jeou; and Maruyama, Tetsuo, 4,468,854, Cl. 29-573.000.
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Edgerton, Gene A.; Engel, John H.; Ottsen, Henning; Seal, Henry A.; and Wadsworth, Joseph F., to Mobil Oil Corporation. Ocean bottom seismic cable connector. 4,469,392, Cl. 339-117.00R.
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Rhodes, Richard P.; Hershkowitz, Frank; and Olmstead, William N., 4,469,584, Cl. 208-11.00R.
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Fair, David L.; Woodard, Kenneth E., Jr.; and Dean, Robert A., to Olin Corporation. Replacement of a structurally damaged membrane. 4,469,571, Cl. 204-98.000.
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Ferm, Richard L., to Chevron Research Company. Heat exchanger antifoulant. 4,469,586, Cl. 208-48.0AA.
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Fish, Errol R. Suntanning booth. 4,469,102, Cl. 128-395.000.
Fish, Leonard A.; and Sverdlik, David, to Casino Technology. Bulk loaded change dispensing apparatus. 4,469,245, Cl. 221-225.000.
Fish, Warren H., to Whirlpool Corporation. Dirt interceptor filter bag mount for vacuum cleaner. 4,469,498, Cl. 55-335.000.
Fisher, Gene A.; and Umbaugh, Raymond E., Sr., deceased (by Umbaugh, Phyllis L., administratrix), to Universal Cooperatives, Inc. Flow meter with a motor driven impeller. 4,468,972, Cl. 73-861.380.
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Flannery, Bobbie A. Head scarf. 4,468,818, Cl. 2-207.000.
Flashner, Michael, to J. T. Baker Chemical Co. Purification of monoclonal antibodies. 4,469,630, Cl. 260-112.00B.
Fler, Jack P.; and Baxter, Alan R., to Jacmorr Manufacturing Limited. Three part slide. 4,469,384, Cl. 312-333.000.
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Forbus, Nancy P.; and Kaeding, Warren W., to Mobil Oil Corporation. Organophosphorus-treated zeolite catalysts for para-selective aromatics conversion. 4,469,806, Cl. 502-62.000.
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Foret, Pierre G., to Foret Systems, Inc. Adjustable intermittent incremental advance system. 4,468,986, Cl. 74-822.000.
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Foret, Pierre G., 4,468,986, Cl. 74-822.000.
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Fox, Robert E.; and Reece, Wendell D., to Deere & Company. Cutter wheel for tillage apparatus. 4,469,185, Cl. 172-540.000.
Franchuk, John M.; and Blanchet, James P., to Western Gear Corporation. Draw-off and hold-back cable tension machine. 4,469,267, Cl. 226-172.000.
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Frischmuth, Hans; Perchermeier, Jurgen; Stimmelmayr, Anton; and Weichselgartner, Heinrich, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Means for separating isotopes of hydrogen based on the principle of gas chromatography. 4,469,496, Cl. 55-197.000.
Frohberger, Paul-Ernst: *See*—
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Fujikawa, Katsuhiro, to Mitsubishi Denki Kabushiki Kaisha. System for controlling a sewing machine. 4,469,038, Cl. 112-277.000.
Fujikawa, Tetsuzo; Uda, Ryoji; and Yamamoto, Hitoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Cooling system in a liquid cooled internal combustion engine. 4,469,052, Cl. 123-41.100.
Fujiki, Kuniharu; Matsumoto, Yukio; and Yoshida, Hiroshi, to Victor Company of Japan, Limited. Magnetic recording media comprising fluorinated organosilicones in a magnetic layer thereof. 4,469,750, Cl. 428-447.000.
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Fujisawa, Takao; Saito, Masayoshi; Yamada, Kohei; and Tsubouchi, Seiji, to Nittan Company, Limited. Combination ionization and photoelectric smoke detector. 4,469,953, Cl. 250-574.000.
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Fujita, Yasuhiko, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Vehicle driving apparatus. 4,468,982, Cl. 74-762.000.
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Sasaki, Nobuo, 4,468,855, Cl. 29-576.00B.
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Fujiwara, Yuji; Muramatsu, Shigeru; Mori, Mitsuhiko; and Sawase, Takamichi, to Nippon Gakki Seizo Kabushiki Kaisha. Solenoid driving apparatus for actuating key of player piano. 4,469,000, Cl. 84-115.000.
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Fukuda, Hiroaki; and Watanabe, Tsukasa, to Aisin Seiki Kabushiki Kaisha. Pressure responsive switch. 4,469,922, Cl. 200-83.00R.
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Fukunaga, Osamu: *See—*
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Fukuoka, Sadao. Footwear. 4,468,869, Cl. 36-3.00B.

Fukushima, Toshitaka, to Fujitsu Limited. Method for forming an ohmic contact to a semiconductor substrate. 4,468,856, Cl. 29-577.00C.

Fukuta, Kenji: *See—*
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Furukawa Electric Co., Ltd., The: *See—*
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Furukawa, Yasuhiko; Sonoda, Hiromu; and Sugihara, Taizo, to Chisso Corporation. Process for producing a highly bulky nonwoven fabric. 4,469,540, Cl. 156-62.400.

Furusawa, Kahei: *See—*
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Fushida, Akira: *See—*
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Futakuchi, Yorio, to Yamaha Hatsudoki Kabushiki Kaisha. Engine intake system. 4,469,067, Cl. 123-432.000.

G. D. Searle & Co.: *See—*
Mueller, Richard A.; and Partis, Richard A., 4,469,885, Cl. 562-459.000.

Gaaf, Jan; and van Santen, Rutger A., to Shell Oil Company. Process for the preparation of catalytically active cross-linked metal silicates. 4,469,813, Cl. 502-263.000.

Gabler, Dieter: *See—*
Boesing, Hans; and Gabler, Dieter, 4,469,133, Cl. 137-625.290.

Gabor, Michael J.: *See—*
Jones, Donald W.; and Gabor, Michael J., 4,469,660, Cl. 422-70.000.

GAF Corporation: *See—*
Charles, John J.; and Nelsen, Suzanne B., 4,469,851, Cl. 525-444.000.

Gagelin, Jean-Jacques: *See—*
Allemand, Robert; Gagelin, Jean-Jacques; and Tournier, Edmond, 4,469,947, Cl. 250-385.000.

Gaku, Morio; and Ikeguchi, Nobuyuki, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition comprising cyanate ester and cyclopentadiene. 4,469,859, Cl. 528-159.000.

Gal, Melinda: *See—*
Tihanyi, Endre; Andrasi, Ferenc; Gal, Melinda; and Sineger, Eleonora, 4,469,692, Cl. 424-249.000.

Galetto, Louis V.; and Rakes, James M., to International Business Machines Corporation. Controlling a multi-wire printhead. 4,470,056, Cl. 346-154.000.

Galiasso Tailleur, Roberto E.; Salazar Guillen, Jose A.; Huskey, Donald; Morales, Alfredo L.; and Aquino, Luig G., to Intevep, S.A. Process for the conversion of asphaltenes and resins in the presence of steam, ammonia and hydrogen. 4,469,587, Cl. 208-61.000.

Gallery, Daniel J., IV; and Gallery, Stanley A. Container having removable closures. 4,469,239, Cl. 220-337.000.

Gallery, Stanley A.: *See—*
Gallery, Daniel J., IV; and Gallery, Stanley A., 4,469,239, Cl. 220-337.000.

Ganci, James B., to Du Pont de Nemours, E. I., and Company. Borax dispersion milling of quinacridones. 4,469,523, Cl. 106-309.000.

Gandelsman, Iosif L.: *See—*
Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.; Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I., 4,469,984, Cl. 313-348.000.

Gantin, Robert: *See—*
Schaulin, Jean-Michel; Gantin, Robert; and Kanat, Yasar, 4,469,005, Cl. 89-33.140.

Garcia, David B.; Sorenson, Bruce A.; Keith, Lawrence H.; Harless, James M.; Walters, Douglas B.; and Prokopetz, Andrew T. Permeation testing apparatus. 4,468,951, Cl. 73-38.000.

Gardner, Beth A.: *See—*
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,469,869, Cl. 546-198.000.

Gardner, Derek V.; and White, Trevor J., to Beecham Group p.l.c. Pentacyclic compounds, their pharmaceutical compositions, and methods of use. 4,469,697, Cl. 424-250.000.

Gardner, Edward B.: *See—*
Kingsbury, Charles M.; Beckwith, Bruce R.; Bares, Frank P.; and Gardner, Edward B., 4,469,501, Cl. 65-158.000.

Garewal, Khem K. S.: *See—*
Blacker, Allen P.; and Garewal, Khem K. S., 4,469,987, Cl. 315-14.000.

Garrison, James W., Jr.: *See—*
Marshall, Walter D.; and Garrison, James W., Jr., 4,469,092, Cl. 128-36.000.

Garritano, Ronald F., to Rheometrics, Inc. Viscosity and elasticity of a fluid. 4,468,953, Cl. 73-60.000.

Garro, Anthony J.; and Phillips, Robert A., to Mount Sinai School of Medicine of the City University of New York, The. Detection of chemical mutagens in marker rescue assay. 4,469,786, Cl. 435-5.000.

Gartland, Robert J., to Goodyear Tire & Rubber Company, The. Article of partially crystalline organic resin and method and apparatus for making same. 4,469,270, Cl. 229-2.50R.

Gassen, Hans-Peter: *See—*
van den Boom, Johannes; Leitner, Wilfried; Salewsky, Gert; and Gassen, Hans-Peter, 4,469,316, Cl. 267-140.100.

Gatton, Gary D.: *See—*
Crump, Druce K.; Wilson, David A.; and Gatton, Gary D., 4,469,663, Cl. 423-242.000.

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Leroy, Daniel; and Gazagne, Laurent, 4,469,474, Cl. 418-217.000.

Geary, Alan P., to Rolls Royce Limited. Device for passing a fluid flow through a barrier. 4,469,470, Cl. 415-115.000.

Gebo, George B. Reel stand. 4,469,289, Cl. 242-85.000.

Gebr. Happich GmbH: *See—*
Kuttler, Otto; and Mack, Gerhard, 4,469,367, Cl. 296-97.00K.

Gebrueder Buehler AG: *See—*
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Geertsma, Nicolaas A. Building system. 4,468,898, Cl. 52-36.000.

Geller, Myer, to United States of America, Navy. Atmospheric transmissometer. 4,469,443, Cl. 356-364.000.

Gelotte, Karl O., to Sterling Drug Inc. Process for preparing 2-(lower-alkoxy)-1-(pyridinyl) ethenyl lower-alkyl ketones. 4,469,871, Cl. 546-249.000.

General Dynamics: *See—*
Speer, Spencer J., 4,469,647, Cl. 264-3.00C.

General Dynamics, Pomona Division: *See—*
Palmer, John P., 4,469,941, Cl. 250-227.000.

General Electric Company: *See—*
Baker, Lewin T., 4,470,025, Cl. 331-178.000.
Belfoure, Edward L.; and Miller, Kenneth F., 4,469,850, Cl. 525-439.000.
Bennett, Moreland P., 4,469,395, Cl. 339-278.00C.
Cox, Charles W., 4,470,104, Cl. 362-211.000.
Johnson, Peter D., 4,469,980, Cl. 313-25.000.
Liu, Ping Y.; and Ko, Allen W., 4,469,838, Cl. 524-394.000.
Losert, Gerhard K., 4,469,383, Cl. 312-296.000.
Lundberg, Richard E.; and Murphy, Bartholomew D., 4,469,994, Cl. 318-591.000.
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Mark, Victor; and Hedges, Charles V., 4,469,861, Cl. 528-196.000.
Matsumoto, Makoto, 4,469,522, Cl. 106-308.00M.
McMillan, Stephen L., 4,468,938, Cl. 68-23.300.
Neumann, Thomas W., 4,469,970, Cl. 310-156.000.
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Sikdar, Subhas K.; and Aneja, Viney P., 4,469,561, Cl. 203-39.000.
Tyrell, John A.; Boutni, Omar M.; and Freimiller, Gary L., 4,469,852, Cl. 525-468.000.

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Katcher, Jay H.; and DelValle, Frank, 4,469,712, Cl. 426-579.000.

General Motors Corporation: *See—*
Hart, Donald J.; and Ottaviani, Robert A., 4,469,841, Cl. 524-512.000.
Newill, William J., 4,469,759, Cl. 429-10.000.

General Tire & Rubber Company, The: *See—*
Sharma, Satish C., 4,469,748, Cl. 428-378.000.

George, David A.: *See—*
Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., 4,469,280, Cl. 241-1.000.

George, Zacheria M., to Alberta Research Council. Regeneration process for poisoned Claus alumina catalyst, including NaOH activation. 4,469,803, Cl. 502-25.000.

Georgia Kaolin Company, Inc.: *See—*
Thompson, Thomas D., III; Walsh, Thomas F.; and Botta, Frank J., 4,469,639, Cl. 260-448.00C.

Gerhold, Mark L. C., to Burroughs Corporation. High speed interconnection network for a cluster of processors. 4,470,114, Cl. 364-200.000.

Gersonde, Klaus; and Sick, Hinrich. Process and apparatus for plotting the oxygen equilibrium curves of blood or hemoglobin solutions. 4,469,439, Cl. 356-41.000.

Gerster, Wolfgang: *See—*
Brosdetzko, Hubert; Gerster, Wolfgang; and Muller, Klaus, 4,469,332, Cl. 277-12.000.

Geschwindner, Herbert, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Device for the delayed piling of sheets. 4,469,321, Cl. 271-183.000.

Getty Synthetic Fuels, Inc.: *See—*
Zison, Stanley W.; and Roqueta, Alex, 4,469,176, Cl. 166-250.000.

Ghisoni, Emilio. Revolver of elevated loading capacity. 4,468,876, Cl. 42-65.000.

Ghosh, Amit K.; Hamilton, C. Howard; and Paton, Neil E., to Rockwell International Corporation. Structural metal matrix composite and method for making same. 4,469,757, Cl. 428-614.000.

Giamei, Anthony F., to United Technologies Corporation. Single crystal solidification using multiple seeds. 4,469,160, Cl. 164-122.100.

Giebmanns, Karl H., to ITM International Tool Machines Inc. Machine for point grinding drills. 4,468,891, Cl. 51-95.0WH.

Giebmanns, Karl H., to ITM International Tool Machines, Inc. Grinding machine. 4,468,892, Cl. 51-99.000.

Gier, Kurt, to Robert Schenk GmbH & Co. KG. Articulated multiaxle vehicle. 4,469,347, Cl. 280-432.000.

Giese, Ralf: *See*—
Korner, Paul; Rest, Heinz; and Giese, Ralf, 4,469,352, Cl. 280-808.000.

Gilbert, Bruce; and Evans, Robert W., to Hughes Tool Company. Expendable plug assembly. 4,469,173, Cl. 166-188.000.

Gilchrist, James E.: *See*—
Campbell, Jeptha E.; and Gilchrist, James E., 4,469,146, Cl. 141-9.000.

Gill, Robert C.; and Naufiett, George W., to United States of America, Navy. Process for the preparation of 2,4-dinitro-2,4-diazapentane. 4,469,888, Cl. 564-109.000.

Gillotti, Nathan J., to Spinair Corp. Device for collecting emissions from kerosene heaters. 4,469,084, Cl. 126-96.000.

Gin, Abram. Device for Yoga exercising. 4,469,326, Cl. 272-134.000.

Giner, Jose D.; and Stark, Herbert H., to Electric Power Research, Institute. Redox battery including a bromine positive electrode and a chromium ion negative electrode, and method. 4,469,760, Cl. 429-31.000.

Ginns, Edward; and French, Joseph. Radioassay for monosialoglycosphingolipid (G_{M1}) ganglioside concentration. 4,469,795, Cl. 436-504.000.

Giolitti, Nicolo , to Remington Ind. E Com. De Sistemas Para Escritorio S.A. Position control mechanism for a typewriter ribbon cartridge. 4,469,458, Cl. 400-214.000.

Gladow, Dean E.: *See*—
Howard, John B.; and Gladow, Dean E., 4,469,266, Cl. 226-106.000.

Glaenzer Spicer: *See*—
Deschatrettes, Gerard; and Tirel, Rene , 4,468,893, Cl. 51-105.00R.

Glanz, Kenneth D., to Appleton Papers Inc. Thermally-responsive record material. 4,470,057, Cl. 346-209.000.

Global Manufacturing Inc.: *See*—
Tompkins, L. Kirk, 4,469,247, Cl. 222-3.000.

Gmeiner, Paul; and Oesch, Gustav, to Micafil AG. Mixing and degassing apparatus for viscous substances. 4,469,444, Cl. 366-144.000.

Gnutzman, Keith: *See*—
Trezise, Richard; Boldt, John; and Gnutzman, Keith, 4,469,459, Cl. 400-216.100.

Goatcher, John K., to International Standard Electric Corporation. Radio receiver with quadrature demodulation and digital processing. 4,470,147, Cl. 375-77.000.

Goel, Anil B., to Ashland Oil, Inc. Manufacture of antimony (III) carboxylates. 4,469,636, Cl. 260-414.000.

Goetz, Frederick J.: *See*—
Tang, David Y.; Cotter, Byron R.; and Goetz, Frederick J., 4,469,893, Cl. 568-424.000.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Miniature toy vehicle driven at three axes. 4,468,884, Cl. 446-462.000.

Goldner, Sandor: *See*—
Lax, Jacob; and Goldner, Sandor, 4,469,915, Cl. 179-2.00A.

Goldstein, Abraham M. B., to University of Southern California. Device for measuring penile tumescence and rigidity. 4,469,108, Cl. 128-694.000.

Goldsworthy Engineering, Inc.: *See*—
Goldsworthy, William B., 4,469,541, Cl. 156-180.000.

Goldsworthy, William B., to Goldsworthy Engineering, Inc. Method for forming reinforced plastic composite articles. 4,469,541, Cl. 156-180.000.

Goletto, Jean: *See*—
Pusineri, Christian; and Goletto, Jean, 4,469,827, Cl. 524-27.000.

Goodboy, George O., to Joy Manufacturing Company. Fluid handling. 4,469,446, Cl. 366-342.000.

Goodman, Jack E., to Chevron Research Company. Etching fountain. 4,469,544, Cl. 156-345.000.

Goodwine, Paul C., to Kidde, Inc. Crawler to base frame connection. 4,469,186, Cl. 180-9.100.

Goodyear Tire & Rubber Company, The: *See*—
Brubaker, Ronald L.; Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,469,284, Cl. 241-25.0TR.
Gartland, Robert J., 4,469,270, Cl. 229-2.50R.

Gordon, Leslie L., III. Skirted plastic worm. 4,468,881, Cl. 43-42.250.

Gorlitz, Frank O.; and Hohener, Werner, to Gebrueder Buehler AG. Sorting cylinder for seeds and other grains. 4,469,230, Cl. 209-683.000.

Gorman, David N.: *See*—
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,848, Cl. 29-526.00R.
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,849, Cl. 29-526.00R.

Goto, Masahiro: *See*—
Ito, Tatsuo; Murata, Tadao; Horiuchi, Miyoshi; and Goto, Masahiro, 4,469,269, Cl. 228-173.00C.

Gotze, Christian: *See*—
Treiber, Helmut; Gotze, Christian; and Lammel, Gunter, 4,469,291, Cl. 242-191.000.

Gougeon, Jan C.; and Thomas, Georg K. Sailboat wing spar structure. 4,469,040, Cl. 114-104.000.

Grabbe, Dimitry; Bakermans, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, to AMP Incorporated. Rotatable cam actuated connector for circuit board edge. 4,469,389, Cl. 339-75.0MP.

Grabner, Christian; Heimbrodt, Klaus-Jurgen; and Feichtiger, Dieter, to Daimler-Benz Aktiengesellschaft. Pneumatic central locking system. 4,468,942, Cl. 70-264.000.

Grahmann, Helmut; Hofmann, Dieter; and Wacker, Alfred, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. Electric lamp with an envelope seal designed as pinch seal, and a device and method for its manufacture. 4,469,983, Cl. 313-318.000.

Grand, Paul S.: *See*—
Ramachandran, Pallassana N.; and Grand, Paul S., 4,469,605, Cl. 252-8.700.

Graser, Earl J., to Manville Service Corporation. Two-piece beverage carrier. 4,469,222, Cl. 206-180.000.

Grass Valley Group, Inc., The: *See*—
Michener, James A., 4,470,064, Cl. 358-10.000.

Gray, B. Martin. Air entrained particulate material valve. 4,469,135, Cl. 137-625.450.

Greding, Robert, to Valmet-Dominion Inc. Free floating rider roll beam mounting. 4,469,286, Cl. 242-65.000.

Gretzinger, James; and Rackley, Robert L., to Du Pont de Nemours, E. I., and Company. Oriented woven furniture support material. 4,469,739, Cl. 428-198.000.

Grierson, Keith J.; and Mokrzycki, Eugene H., to Whirlpool Corporation. Electric motor coil-retaining means. 4,469,967, Cl. 310-71.000.

Griffis, Patrick D., to RCA Corporation. Frequency translation phase-locked loop television sound detection system. 4,470,070, Cl. 358-198.000.

Grigsby, Robert A., Jr.; Speranza, George P.; and Brennan, Michael E., to Texaco, Inc. Liquid terephthalic ester polyols and polyisocyanurate foams therefrom. 4,469,824, Cl. 521-173.000.

Grigsby, Robert A., Jr.: *See*—
Knifton, John F.; and Grigsby, Robert A., Jr., 4,469,895, Cl. 568-454.000.

Grimaldi, Pierre-Francois A. Dispenser for automatically dispensing a beverage or liquid food into take-away recipients. 4,469,150, Cl. 141-95.000.

Groeneweg, Adrianus, to ITT Industries, Inc. Liquid meter. 4,468,964, Cl. 73-259.000.

Gros, Henry; and Kyburz, Markus, to Sulzer Brothers Limited. Apparatus and method for denitrifying water. 4,469,599, Cl. 210-610.000.

Grossmann, Hans, to Sandoz Ltd. Use of the 1:2 chromium complex of 1-amino-2-(3', 5'-dinitro-2'-hydroxyphenylazo)-4-sulfonaphthalene and alkali metal salts thereof for dyeing polyamides and oxide layers on aluminum and aluminum alloys. 4,469,485, Cl. 8-522.000.

Grot, Walther G.; Rivers, Joseph T.; and Silva, Raimund H., to Du Pont de Nemours, E. I., and Company. Protective clothing of fabric containing a layer of highly fluorinated ion exchange polymer. 4,469,744, Cl. 428-246.000.

Grote, Daniel; Raymond, Duane; and Mosher, Joseph C., to Brahma, Inc. Truck bed cover assembly. 4,469,317, Cl. 269-69.000.

Grover, Donald D.: *See*—
Olson, Gene E.; Becker, Thomas P.; and Grover, Donald D., 4,469,952, Cl. 250-551.000.

Grundig E. M. V.: *See*—
Mangold, Hans, 4,469,292, Cl. 242-199.000.

Grundmann, Raban, to Chemische Werke Huels AG. Process for the production of a voluminous, particulate vinyl chloride polymer. 4,469,818, Cl. 521-64.000.

GTE Automatic Electric Inc.: *See*—
Cripps, Peter K., 4,469,918, Cl. 179-2.0EA.

GTE Laboratories Incorporated: *See*—
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,469,489, Cl. 51-295.000.

GTE Products Corporation: *See*—
Buckinx, Pol; and Jacobs, Mieke, 4,470,026, Cl. 333-194.000.
Cheresnowsky, Michael J.; and Vanderpool, Clarence D., 4,469,505, Cl. 75-0.5BA.

Guertin, Patrick W., to Motorola Inc. Multilayer, fully-trimmable, film-type capacitor and method of adjustment. 4,470,096, Cl. 361-277.000.

Guigan, Jean. Method and apparatus for dispensing a predetermined dose of a sample liquid into a receptor cell. 4,469,793, Cl. 436-45.000.

Guillard, Jean-Michel: *See*—
Guyot, Jean; Guillard, Jean-Michel; and Bauchet, Germain, 4,469,973, Cl. 310-258.000.

Guillon, Claude R.; and Schwarz, Annick, to Sofrigam. Method of conditioning and a box for the implementation thereof. 4,468,913, Cl. 53-440.000.

Guiochon, Georges A.: *See*—
Beaver, Lois A.; and Guiochon, Georges A., 4,469,601, Cl. 210-658.000.

Gulberg, Norman B.; and Busby, Richard J., to Hughes Aircraft Company, by said Norman B. Gulberg. Tool for separating mated connectors. 4,468,858, Cl. 29-764.000.

Gulf Research & Development Company: *See*—
Kofke, William A., Jr.; and Milson, Ilia, 4,469,805, Cl. 502-33.000.

Gunn, William L.; and Preacher, Thomas, Jr., to Brink's Inc. Coin processing apparatus. 4,469,113, Cl. 133-3.00E.

Gunnerson, Robert E.: *See*—
Coyle, William E.; Gunnerson, Robert E.; and Shoulta, Richard W., 4,469,591, Cl. 209-170.000.

Gunzi, Kouichi: *See*—
Yamazaki, Yoshio; Gunzi, Kouichi; and Inowa, Shigeru, 4,469,434, Cl. 355-15.000.

Gutleber, Frank S., to United States of America, Army. Non-orthogonal mobile subscriber multiple access system. 4,470,138, Cl. 370-18.000.

Guttag, Karl M.; and Carey, James, to Texas Instruments Incorporated. Synchronizer circuit. 4,469,964, Cl. 307-481.000.

Guyer, Reynolds W. Self contained game. 4,469,329, Cl. 273-146.000.

Guyot, Jean; Guillard, Jean-Michel; and Bauchet, Germain, to Alsthom-Atlantique. Resiliently suspended stator for a dynamo-electrical synchronous machine. 4,469,973, Cl. 310-258.000.

Gwerder, Art J.: *See*—
Rebaudo, Amadeus P.; Gwerder, Art J.; Chow, William C.; and Ho, Stimson F., 4,470,100, Cl. 361-413.000.

Gyugyi, Laszlo, to Westinghouse Electric Corp. Static VAR generator having a thyristor circuit arrangement providing reduced losses. 4,470,005, Cl. 323-210.000.

H. B. Zachry Company: *See*—
Danielson, Glen; and Riley, Clyde H., 4,469,722, Cl. 427-423.000.

H & K Bradley (Trailer Equipment) Limited: *See*—
Bradley, Harry S., 4,469,202, Cl. 188-112.00R.

Haas, David J.; Blionas, Costas; and Muenzen, Joseph P., to North American Philips Corporation. Lens switching system for use in X-ray inspecting devices. 4,469,403, Cl. 350-254.000.

Haase, Thomas A.: *See*—
Pesa, Frederick A.; and Haase, Thomas A., 4,469,886, Cl. 562-522.000.

Haataja, Bruce A.; Kilpela, Tauno B.; Krueger, Gordon P.; and Adams, Roy D., to Michigan Technological University, Board of Control of. Multiple funnel flake aligner for making a loosely felted mat of aligned wood flakes. 4,469,216, Cl. 198-382.000.

Haga, Toshikatu: *See*—
Akazawa, Toshitada; Suzuki, Kohkichi; and Haga, Toshikatu, 4,469,576, Cl. 204-237.000.

Hagin, Faust; and Drewitz, Hans J., to M.A.N. Maschinenfabrik Augsburg-Nurnberg AG. Articulated bus. 4,469,187, Cl. 180-14.200.

Hahn, Friedrich E.: *See*—
Wolber, Jorg; Kunze, Dieter J.; Hahn, Friedrich E.; and Demmer, Walter, 4,470,066, Cl. 358-171.000.

Hahn, Granville J.; and Rutledge, Raleigh N., to Cosden Technology, Inc. Process for extruding thermoplastic compositions. 4,469,651, Cl. 264-40.600.

Hakala, David F., to RCA Corporation. Process for treating high-density information disc recording substrates. 4,469,563, Cl. 204-5.000.

Hakoun, Roland, to Compagnie Lyonnaise de Transmissions Optiques. Connector for a single optical fiber. 4,469,400, Cl. 350-96.210.

Halford, James G.: *See*—
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,848, Cl. 29-526.00R.
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,849, Cl. 29-526.00R.

Hall, Allen L.: *See*—
Fayter, Richard G., Jr.; and Hall, Allen L., 4,469,891, Cl. 568-031.000.

Halliburton Company: *See*—
Carter, Ernest E., Jr., 4,468,967, Cl. 73-661.000.
Freeman, Tommie A., 4,469,174, Cl. 166-202.000.

Hamada, Akira; Funakoshi, Akira; and Ohira, Keiichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Electrode arrangement for a folded polymer piezoelectric ultrasonic detector. 4,469,978, Cl. 310-366.000.

Hamada, Kazuhiko; and Suzukamo, Gohfu, to Sumitomo Chemical Co., Ltd. Process for preparation of hydroxybenzaldehydes. 4,469,894, Cl. 568-437.000.

Hamada, Takeshi; and Komatsubara, Yoshinobu, to Mitsui Mining Company Limited. Method of removing sulfur oxides and nitrogen oxides by dry process. 4,469,662, Cl. 423-235.000.

Hamilton, C. Howard: *See*—
Ghosh, Amit K.; Hamilton, C. Howard; and Paton, Neil E., 4,469,757, Cl. 428-614.000.

Hamilton, Daniel B.; and Hughes, James H., Jr. Pressure cooking and smoking apparatus. 4,469,020, Cl. 99-352.000.

Hampel, Josef, to Andritz-Ruthner Industrieanlagen Aktiengesellschaft. Process of continuously electrodepositing on strip metal on one or both sides. 4,469,565, Cl. 204-15.000.

Hanas, Bertil; and Rudolph, Gunter, to Asea Akt. Continuous casting temperature control apparatus. 4,469,162, Cl. 164-154.000.

Hanlon, Paul C., to Dover Corporation. Static leak seal assembly for use in fluid containing machinery. 4,469,017, Cl. 92-168.000.

Hansen, Frits P. U., to Kosan Teknova A/S. Valve device for the prevention of the overfilling of portable containers, particulary gas cylinders. 4,469,116, Cl. 137-39.000.

Hansen, Frits P. U., to Kosan Teknova A/S. Valve device for the prevention of the overfilling of portable containers, particularly gas cylinders. 4,469,117, Cl. 137-39.000.

Hansen, Gerhard. Container with a dosing chamber. 4,469,254, Cl. 222-207.000.

Hansen, Kenneth N., to Allis-Chalmers Corporation. Control for differential lock. 4,469,208, Cl. 192-4.00A.

Haq, Nadeemul, to National Semiconductor Corporation. Plating control system. 4,469,723, Cl. 427-437.000.

Haque, Yusuf A., to American Microsystems, Inc. Programmable transversal filter. 4,470,126, Cl. 364-825.000.

Hara, Tadanori: *See*—
Kaneyasu, Masataka; and Hara, Tadanori, 4,469,878, Cl. 549-248.000.

Harada, Hiromu: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,469,865, Cl. 548-341.000.

Harada, Masahide: *See*—
Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,469,771, Cl. 430-126.000.

Hardee, Carl L.; and Wagner, Robert E., to Borg-Warner Chemicals, Inc. Dust-tight hatch closure assembly. 4,469,152, Cl. 141-312.000.

Hardwick, Charles W. Intussuscepting balloon catheter for stone extraction. 4,469,100, Cl. 128-328.000.

Harless, James M.: *See*—
Garcia, David B.; Sorenson, Bruce A.; Keith, Lawrence H.; Harless, James M.; Walters, Douglas B.; and Prokopetz, Andrew T., 4,468,951, Cl. 73-38.000.

Harney, David E.: *See*—
Bennett, John E.; Harney, David E.; and Mitchell, Thomas A., 4,469,761, Cl. 429-50.000.

Harnischfeger Corporation: *See*—
Poetter, Rainer, 4,469,594, Cl. 210-108.000.

Harris, Byron C.: *See*—
Buer, Jeffrey J.; and Harris, Byron C., 4,469,215, Cl. 198-382.000.

Harris, Delbert L., to Iowa State University Research Foundation. Method of combined parenteral and oral vaccination for swine dysentery. 4,469,672, Cl. 424-23.000.

Harris, Frank E., deceased; and by Lovejoy, Beverly I., administratix, to Lovejoy, Beverly I.; Harris, Kim M.; Felchle, Margarette C.; and Nolan, Ruth L. Gate assembly. 4,468,888, Cl. 49-396.000.

Harris, James E., to Eastman Kodak Company. Jet and bustle tow blooming apparatus for a tow blooming process. 4,468,845, Cl. 28-283.000.

Harris, Kim M.: *See*—
Harris, Frank E., deceased; and Lovejoy, Beverly I., administratix, 4,468,888, Cl. 49-396.000.

Harrison, Edwin L.; and Retzlaff, Ronald D., to Creative Metal Forming, Inc. Cartridge magazine for direct ejection of a cartridge into the firing chamber of a firearm. 4,468,875, Cl. 42-50.000.

Hart, Donald J.; and Ottaviani, Robert A., to General Motors Corporation. Latent acid catalyst for waterborne coatings. 4,469,841, Cl. 524-512.000.

Hartmann, Uwe: *See*—
Favreau, Jean-Claude; Hartmann, Uwe; and Mai, Udo, 4,469,992, Cl. 315-371.000.

Hartry, Donald R., to Remo, Inc. Method of forming a non-tunable head. 4,469,001, Cl. 84-269.000.

Harui, Norio, to Advanced Technology Laboratories, Inc. Needle guide for use with medical ultrasonic scanning apparatus. 4,469,106, Cl. 128-660.000.

Haruna, Tohru: *See*—
Minagawa, Motonobu; Haruna, Tohru; and Takahashi, Masayuki, 4,469,828, Cl. 524-100.000.

Harwood, William J., to Scapa Inc. Papermakers belt having smooth surfaces and enlarged seam loops. 4,469,142, Cl. 139-383.00A.

Hasbro Industries, Inc.: *See*—
Ulrich, Hans; Eddins, Fred D.; Reinertsen, Tormod K.; D'Aguanno, Steven R.; and D'Ambra, Americo, Jr., 4,469,327, Cl. 273-1.0GG.

Hasebe, Koshi; Totani, Shinzo; Muramoto, Kazuo; Mikuni, Hajime; Akutsu, Kazushi; and Minami, Kazuaki, to Nippondenso Co., Ltd. Mobile navigator. 4,470,119, Cl. 364-449.000.

Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, to Ricoh Co., Ltd. Electrophotographic light-sensitive member with thin overlayer. 4,469,771, Cl. 430-126.000.

Hasegawa, Kenji: *See*—
Norimoto, Misato; and Hasegawa, Kenji, 4,469,156, Cl. 144-380.000.

Hasegawa, Shinichi: *See*—
Nakamura, Makoto; Chiyoda, Tsutomu; and Hasegawa, Shinichi, 4,469,899, Cl. 568-768.000.

Hasegawa, Shinji; Toriyama, Kazuhisa; Pohl, Ludwig; and Weber, Georg, to Hitachi, Ltd.; and Merck Patent GmbH. Liquid crystal mixture. 4,469,618, Cl. 252-299.500.

Hasegawa, Shumpei; and Umesaki, Shigeo, to Honda Motor Co., Ltd. Fuel pump control system for internal combustion engines, having a fail safe function for abnormality in fuel injection valves. 4,469,065, Cl. 123-359.000.

Hasegawa, Yasumasa: *See*—
Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, 4,469,154, Cl. 144-2.00R.

Hashimoto, Masuyuki: *See*—
Mashimo, Katsuyuki; Masuda, Teruo; Nakayama, Toshio; Hashimoto, Masuyuki; and Kanai, Takeshi, 4,468,934, Cl. 62-495.000.

Hashimoto, Takashi: *See*—
Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; and Hashimoto, Takashi, 4,469,685, Cl. 424-195.000.

Hashimoto, Toshio: *See*—
Kato, Yoshito; Hashimoto, Toshio; and Kimura, Masatoshi, 4,470,108, Cl. 364-167.000.

Hashimoto, Yasuyuki; and Shimizu, Kazuo, to Ancos Co., Ltd. Writing instrument with sealing tip. 4,469,462, Cl. 401-107.000.

Haskett, Thomas E.; and Schmitt, Joseph J., to Minnesota Mining and Manufacturing Company. EDM Electrodes. 4,469,654, Cl. 264-62.000.

Hasler AG Bern: *See*—
Steinlin, Walter, 4,470,018, Cl. 328-133.000.

Hata, Hideo: *See*—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,752, Cl. 428-475.800.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,753, Cl. 428-475.800.

Hatano, Yoshio: *See*—
Iwayanagi, Takao; Kohashi, Takahiro; Nonogaki, Saburo; and Hatano, Yoshio, 4,469,778, Cl. 430-325.000.

Hatayama, Shigeharu; and Ota, Hirofumi, to Hitachi, Ltd. Bubble memory device and method of manufacturing the same. 4,470,131, Cl. 365-2.000.

Hattori, Nobuoto: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,469,323, Cl. 271-288.000.

Hauni-Werke Korber & Co. KG.: *See*—
Finck, Peter; and Kohler, Elke, 4,469,111, Cl. 131-281.000.

Hayakawa, Masakatsu: *See*—
Takeda, Tooru; Hayakawa, Masakatsu; and Inoue, Yasuo, 4,468,947, Cl. 72-467.000.

Hayashi, Eiji: *See*—
Abe, Takashi; Baba, Hajime; Hayashi, Eiji; and Nagase, Shunji, 4,469,879, Cl. 549-465.000.

Hayashi, Keizo; Sumida, Atsushi; Murayama, Teruo; and Minobe, Tomio, to Toyoda Gosei Co., Ltd.; and Micro Denshi Co., Ltd. Method for reclamation of vulcanized rubber. 4,469,817, Cl. 521-45.000.

Hayashi, Masaharu; and Kuga, Ryoichi, to Aisin Seiki Co., Ltd. Viscous fluid coupling device. 4,469,209, Cl. 192-58.00B.

Hayashi, Masakatsu: *See*—
Itoh, Masaaki; Tanaka, Takeo; Hayashi, Masakatsu; Kudo, Mituo; and Tomita, Akira, 4,469,167, Cl. 165-151.000.
Itoh, Masaaki; Kodoh, Mituo; Tomita, Akira; Hayashi, Masakatsu; and Tanaka, Takeo, 4,469,168, Cl. 165-152.000.

Hayashi, Mikio, to Seikosha Co., Ltd. Cross hammer type printer head. 4,469,023, Cl. 101-93.480.

Hayashi, Shinsuke: *See*—
Hirai, Toshio; Hayashi, Shinsuke; and Ohkubo, Akira, 4,469,801, Cl. 501-96.000.

Hayashi, Yoshihiro: *See*—
Takashima, Masaru; Matsuyama, Shigeru; Hayashi, Yoshihiro; Ito, Hisaji; Fujita, Kotaro; Inai, Kenji; and Takemoto, Shoji, 4,469,309, Cl. 266-44.000.

Haycock, Ivan J., to Leida Systems Limited. Support assembly. 4,469,031, Cl. 108-144.000.

Haydn, Friedrich: *See*—
Ruff, Reinhard; Haydn, Friedrich; and Ebhardt, Horst, 4,469,981, Cl. 315-205.000.

Hayes, Robert. Automatic chimney fire extinguisher and method. 4,469,183, Cl. 169-46.000.

Haylett, Lyle M., to B.F. Goodrich Company, The. Demodulation technique for rip detector signals. 4,470,120, Cl. 364-507.000.

Hays, Laurence W.; and Cotten, H. Wayne, to Aluminum Company of America. Use of a reinforced ceramic tube in the electrolytic production of metals. 4,469,570, Cl. 204-67.000.

Hazony, Dov: *See*—
Resch, Robert J.; Hazony, Dov; and Berris, Richard E., Jr., 4,470,001, Cl. 318-810.000.

Heald, Anthony F.: *See*—
Ita, Callixtus E.; Heald, Anthony F.; and Egli, Peter, 4,469,870, Cl. 546-199.000.

Heaton, William E.: *See*—
Jenkins, Alfred D.; and Heaton, William E., 4,470,111, Cl. 364-200.000.

Hecmati, Michel. Method for eliminating wrinkles occurring in the human skin. 4,469,676, Cl. 424-95.000.

Hedges, Charles V.: *See*—
Mark, Victor; and Hedges, Charles V., 4,469,861, Cl. 528-196.000.

Hedinger, Paul R.: *See*—
Slaats, Mathew A.; Henriott, Jay M.; Hedinger, Paul R.; and Trinkel, Steven F., 4,469,382, Cl. 312-219.000.

Hehn, Bruce A., to Alpha Enterprises, Inc. Desk-top storage unit. 4,469,231, Cl. 211-11.000.

Heidelberger Druckmaschinen: *See*—
Loffler, Gerhard; and Arendt, Franz, 4,469,025, Cl. 101-171.000.

Heimbrodt, Klaus-Jurgen: *See*—
Grabner, Christian; Heimbrodt, Klaus-Jurgen; and Feichtiger, Dieter, 4,468,942, Cl. 70-264.000.

Heinle, Georg, to Siemens Aktiengesellschaft. Apparatus and method for simulating the machine flux of a rotating field machine. 4,470,000, Cl. 318-805.000.

Heinrichs, Bernhard: *See*—
Jokisch, Friedrich; and Heinrichs, Bernhard, 4,469,559, Cl. 202-270.000.

Heinsohn, George E.: *See*—
Carcia, Peter F.; Heinsohn, George E.; and Rao, Velliyur N. M., 4,469,640, Cl. 260-453.00P.

Heki, Tatsuo; and Mifune, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide emulsions. 4,469,784, Cl. 430-567.000.

Held, Robert P., to Du Pont de Nemours, E. I., and Company. Prolonged tack toners for the preparation of electric circuits. 4,469,625, Cl. 252-514.000.

Helle, Gordon W.; Adams, Homer C.; and Kleine, Richard A., to UNR Industries, Inc. Wood burning stove. 4,469,083, Cl. 126-61.000.

Heller, Harold; and Schapel, Dietmar, to Bayer Aktiengesellschaft. Ion exchanger fertilizers and a process for supplying plants with nutrients uniformly and over a long period of time. 4,469,502, Cl. 71-11.600.

Hendercraft Metal Works, Inc.: *See*—
Henderson, Joe W.; and Henderson, Ronald J., 4,468,901, Cl. 52-79.600.

Henderson, Joe W.; and Henderson, Ronald J., to Hendercraft Metal Works, Inc. Porch and stair assembly for mobile homes. 4,468,901, Cl. 52-79.600.

Henderson, Ronald J.: *See*—
Henderson, Joe W.; and Henderson, Ronald J., 4,468,901, Cl. 52-79.600.

Henley, Terry E.: *See*—
Abbott, Phillip G., 4,469,358, Cl. 292-288.000.

Henriott, Jay M.: *See*—
Slaats, Mathew A.; Henriott, Jay M.; Hedinger, Paul R.; and Trinkel, Steven F., 4,469,382, Cl. 312-219.000.

Herbert, Alan: *See*—
Kirk, Roy; and Herbert, Alan, 4,468,936, Cl. 63-12.000.

Herbulot, Jean; and Jumel, Bernard, to Valeo. Rotatable brake member provided with ventilation channels. 4,469,203, Cl. 188-218.0XL.

Hercules Incorporated: *See*—
Klosiewicz, Daniel W., 4,469,809, Cl. 502-117.000.
Maslanka, William W.; and Spence, Gavin G., 4,469,555, Cl. 162-162.000.

Herington, Thomas H. Clamp for use with a clipboard or the like. 4,468,841, Cl. 24-67.00R.

Hernandez, Walter; and Saumell, Luis E. Magnetic chuck. 4,470,032, Cl. 335-288.000.

Herrera, Olivia H. Medical sleeve. 4,469,095, Cl. 128-65.000.

Hershkowitz, Frank: *See*—
Rhodes, Richard P.; Hershkowitz, Frank; and Olmstead, William N., 4,469,584, Cl. 208-11.00R.

Herzl, Peter J.; and Augustine, Robert J., to Fischer and Porter Company. Ultrasonic flowmeter for clean and dirty fluids. 4,468,971, Cl. 73-861.280.

Hesterlee, Jerry M., to Southwire Company. Method for controlled temperature accumulator for elongated materials. 4,469,534, Cl. 148-156.000.

Hettinger, William P., Jr.; and Beck, Hubert W., to Ashland Oil, Inc. Immobilization of vanadia deposited on sorbent materials during visbreaking treatment of carbo-metallic oils. 4,469,588, Cl. 208-77.000.

Heywood, Alan E.: *See*—
Stephenson, David J.; Heywood, Alan E.; and Selman, Gordon L., 4,469,666, Cl. 423-376.000.

Hibst, Hartmut, to BASF Aktiengesellschaft. Preparation of ferrites from iron (II) sulfate. 4,469,669, Cl. 423-594.000.

Hick Hargreaves & Company Limited: *See*—
Kendall, Clifford, 4,468,866, Cl. 34-15.000.

Hickmann, Eckhard: *See*—
Nissen, Dietmar; and Hickmann, Eckhard, 4,469,653, Cl. 264-51.000.

Hidaka, Akira: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Ichikawa, Akira; Kitasei, Yasuzi; and Hidaka, Akira, 4,470,124, Cl. 364-571.000.

Higashio, Yasuhiko: *See*—
Araki, Masashi; and Higashio, Yasuhiko, 4,469,907, Cl. 585-259.000.

Higdon, John M., to International Business Machines Corporation. Control arrangement for magnetic bubble memories. 4,470,128, Cl. 364-900.000.

Higginbotham, Gordon J. S.; Marjoram, John R.; and Horrocks, Frederick J., to Rolls-Royce Limited. Method of and mould for making a cast single crystal. 4,469,161, Cl. 164-122.200.

Hile, Jeffrey B. Socket wrench assembly. 4,468,990, Cl. 81-60.000.

Hill, James J.; and Marven, Al, to Cook International, Inc. Automatic and adjustable valving mechanism. 4,469,255, Cl. 222-649.000.

Hiller, Don: *See*—
Snyder, David E.; and Hiller, Don, 4,469,119, Cl. 137-72.000.

Hilliard Corporation, The: *See*—
White, Leslie R., 4,469,598, Cl. 210-489.000.

Himelreich, Louis E., Jr., to Du Pont de Nemours, E. I., and Company. Oriented net furniture support material. 4,469,738, Cl. 428-198.000.

Hinkamp, Paul E., to Dow Chemical Company, The. Surfactant composition containing alkylated biphenylyl phenyl ether sulfonates. 4,469,608, Cl. 252-8.55D.

Hinterkeuser, Jakob: *See*—
Abelitis, Andris; and Hinterkeuser, Jakob, 4,469,664, Cl. 423-244.000.

Hipp, James, to Petro-Drive, Inc. Method of installing a casing hanger. 4,469,182, Cl. 166-382.000.

Hirai, Hiroyuki; Nakamura, Koichi; and Iwano, Haruhiko, to Fuji Photo Film Co., Ltd. Color image forming process. 4,469,780, Cl. 430-373.000.

Hirai, Toshio; Hayashi, Shinsuke; and Ohkubo, Akira, to Hirai, Toshio; and Hayashi, Shinsuke. Titanium-containing silicon nitride film bodies and a method of producing the same. 4,469,801, Cl. 501-96.000.

Hiraizumi, Kazuo; Shirato, Kozo; and Kawashima, Kazuyasu, to Erma Optical Works, Ltd. Method and device for degassifying liquid. 4,469,495, Cl. 55-189.000.

Hiramatsu, Takeo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Slip control system for a clutch. 4,468,988, Cl. 74-868.000.

Hirata, Atsumi; Mitsui, Katsuyuki; and Koumatsu, Yasutaka, to Victor Company of Japan, Ltd. Pulse driven control circuit for moving a transducer across a rotary recording medium of pulses applied thereto. 4,470,078, Cl. 358-342.000.

Hirose, Takao: *See*—
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,469,667, Cl. 423-447.100.

Hiroshima, Minoru: *See*—
Matsumoto, Shinzo; and Hiroshima, Minoru, 4,470,132, Cl. 365-43.000.

Hirschi, Richard E.; and Payne, George C., to Teknetics, Inc. Metal detector system with undesirable target and mineralized ground discrimination. 4,470,015, Cl. 324-329.000.
Hiss, Timothy G., to Du Pont de Nemours, E. I., and Company. Polyvinyl butyral laminates. 4,469,743, Cl. 428-215.000.
Hitachi Cable Ltd.: *See*—
Watanabe, Shigetaka; Suzuki, Masahiro; and Matsuga, Yoshiaki, 4,469,729, Cl. 428-36.000.
Hitachi Koki Company, Limited: *See*—
Kozawa, Hiroomi; Nishino, Shinichi; and Katagiri, Shigenobu, 4,469,453, Cl. 384-117.000.
Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, 4,469,264, Cl. 226-74.000.
Hitachi, Ltd.: *See*—
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Ohashi, Masabumi, 4,470,063, Cl. 357-67.000.
Hasegawa, Shinji; Toriyama, Kazuhisa; Pohl, Ludwig; and Weber, Georg, 4,469,618, Cl. 252-299.500.
Hatayama, Shigeharu; and Ota, Hirofumi, 4,470,131, Cl. 365-2.000.
Itoh, Masaaki; Tanaka, Takeo; Hayashi, Masakatsu; Kudo, Mituo; and Tomita, Akira, 4,469,167, Cl. 165-151.000.
Itoh, Masaaki; Kodoh, Mituo; Tomita, Akira; Hayashi, Masakatsu; and Tanaka, Takeo, 4,469,168, Cl. 165-152.000.
Iwayanagi, Takao; Kohashi, Takahiro; Nonogaki, Saburo; and Hatano, Yoshio, 4,469,778, Cl. 430-325.000.
Kuroda, Shigeo; Takahashi, Takahiko; and Anzai, Akio, 4,469,535, Cl. 148-187.000.
Manaka, Toshio; and Atago, Takeshi, 4,469,064, Cl. 123-339.000.
Matsumoto, Shinzo; and Hiroshima, Minoru, 4,470,132, Cl. 365-43.000.
Muramatsu, Akira, 4,470,062, Cl. 357-50.000.
Nakamura, Kozo; and Kozima, Yasuyuki, 4,470,073, Cl. 358-261.000.
Nakano, Fumio; Iwasaki, Kishiro; and Tanno, Seikichi, 4,469,409, Cl. 350-341.000.
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; and Tomita, Yoshifumi, 4,469,766, Cl. 430-23.000.
Suzuki, Satoshi, 4,468,928, Cl. 60-602.000.
Terashima, Isamu, 4,469,430, Cl. 355-3.00R.
Tomite, Tosio, 4,469,969, Cl. 310-154.000.
Hitachi Shipbuilding & Engineering Co., Ltd.: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Ho, Stimson F.: *See*—
Rebaudo, Amadeus P.; Gwerder, Art J.; Chow, William C.; and Ho, Stimson F., 4,470,100, Cl. 361-413.000.
Ho, Winston: *See*—
Stanley, Kerry G.; and Ho, Winston, 4,469,705, Cl. 424-312.000.
Hobbs, James R. Oxygen removal system for a bed. 4,468,825, Cl. 5-508.000.
Hodkinson, Harold, to Automotive Products plc. Vehicle brake booster. 4,468,926, Cl. 60-550.000.
Hodogaya Chemical Company, Ltd.: *See*—
Akazawa, Toshitada; Suzuki, Kohkichi; and Haga, Toshikatu, 4,469,576, Cl. 204-237.000.
Hoeberechts, Arthur M. E.; and van Rosmalen, Gerard E., to U.S. Philips Corporation. Device for detecting radiation and semiconductor device for use in such a device. 4,469,945, Cl. 250-370.000.
Hoechst Aktiengesellschaft: *See*—
Millauer, Hans; Schwertfeger, Werner; and Siegemund, Gunter, 4,469,641, Cl. 260-458.00F.
Schneider, Manfred; Deubel, Reinhold; and Schunck, Rainer, 4,469,516, Cl. 106-23.000.
Hoechst-Roussel Pharmaceuticals, Incorporated: *See*—
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 4,469,889, Cl. 564-254.000.
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,469,869, Cl. 546-198.000.
Hoffmann, Herbert: *See*—
Spiegelberg, Karl; Hoffmann, Herbert; Jeske, Helmfried; Kolm, Alexander; and Ebeling, Fred, 4,469,932, Cl. 219-121.0PA.
Hoffmann-La Roche Inc.: *See*—
Andrews, Kenneth J. M., 4,469,686, Cl. 424-200.000.
Trybulski, Eugene J., 4,469,633, Cl. 260-239.0BB.
Hofmann, Dieter: *See*—
Grahmann, Helmut; Hofmann, Dieter; and Wacker, Alfred, 4,469,983, Cl. 313-318.000.
Hofmann, Frank, to Walter Hofmann Maschinenfabrik. Device for measuring the length of road marking lines. 4,470,149, Cl. 377-2.000.
Hofsass, Peter. Thermal switch. 4,470,033, Cl. 337-343.000.
Hoh, George L.; and Vassallo, Donald A., to Du Pont de Nemours, E. I., and Company. Heat seal composition. 4,469,754, Cl. 428-476.300.
Hohener, Werner: *See*—
Gorlitz, Frank O.; and Hohener, Werner, 4,469,230, Cl. 209-683.000.
Holland, Andrew B.: *See*—
Cowan, James J.; and Holland, Andrew B., 4,469,407, Cl. 350-314.000.
Holtz, Frederick C., Jr., to Crucible, Inc. Sintered high speed tool steel alloy composition. 4,469,514, Cl. 75-236.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ajiki, Yoshio; Honda, Shoichi; and Matsuura, Masaaki, 4,469,061, Cl. 123-198.00F.
Inagaki, Takashi; Wakatsuki, Goroei; and Kimura, Shigeo, 4,468,979, Cl. 74-606.00R.
Mita, Yoshinori, 4,469,188, Cl. 180-215.000.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Ichikawa, Akira; Kitasei, Yasuzi; and Hidaka, Akira, 4,470,124, Cl. 364-571.000.
Yamaguchi, Ken, 4,469,190, Cl. 180-219.000.
Honda Motor Co., Ltd.: *See*—
Hasegawa, Shumpei; and Umesaki, Shigeo, 4,469,065, Cl. 123-359.000.
Honda, Shoichi: *See*—
Ajiki, Yoshio; Honda, Shoichi; and Matsuura, Masaaki, 4,469,061, Cl. 123-198.00F.
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Honeysett, Randal M.: *See*—
McFadden, Michael B.; and Honeysett, Randal M., 4,469,272, Cl. 229-28.00R.
Honeywell GmbH: *See*—
Daab, Heinz, 4,470,107, Cl. 364-140.000.
Hong, Kee S. Electrically driven knife whetting machine. 4,468,894, Cl. 51-109.0BS.
Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., to Lever Brothers Company. Deodorant product for surface treatment. 4,469,848, Cl. 252-106.000.
Hopwell, Ernest E., to Linvar Limited. Structural joints. 4,469,030, Cl. 108-28.000.
Horacek, Heinrich: *See*—
Bueltjer, Uwe; Horacek, Heinrich; Druschke, Wolfgang; Franzmann, Gernot; Klahr, Erhard; and Foerster, Hans-Juergen, 4,469,831, Cl. 524-112.000.
Hori, Hisako: *See*—
Shirahata, Isao; Nakamura, Nobuyuki; Shioya, Shigeharu; and Hori, Hisako, 4,469,718, Cl. 427-120.000.
Horiba, Ltd.: *See*—
Tanaka, Masaru; Noguchi, Naoki; and Ishida, Kozo, 4,469,946, Cl. 250-373.000.
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive material comprising a charge-generating material and a charge-transporting material. 4,469,768, Cl. 430-58.000.
Horikiri Spring Manufacturing Co., Ltd.: *See*—
Tomita, Makoto; Tanaka, Tadanori; and Ebata, Toshikazu, 4,469,349, Cl. 280-665.000.
Horinishi, Katsumi: *See*—
Maruyama, Yuji; and Horinishi, Katsumi, 4,469,990, Cl. 315-241.00P.
Horiuchi, Hideyuki: *See*—
Nakamura, Keiichi; and Horiuchi, Hideyuki, 4,469,919, Cl. 179-6.060.
Horiuchi, Miyoshi: *See*—
Ito, Tatsuo; Murata, Tadao; Horiuchi, Miyoshi; and Goto, Masahiro, 4,469,269, Cl. 228-173.00C.
Horiuchi, Yasuhiro: *See*—
Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Horiuchi, Yasuhiro, 4,469,068, Cl. 123-447.000.
Horrocks, Frederick J.: *See*—
Higginbotham, Gordon J. S.; Marjoram, John R.; and Horrocks, Frederick J., 4,469,161, Cl. 164-122.200.
Hoshina, Aya, heir: *See*—
Ohno, Katsutoshi; Abe, Tomohiko; Hoshina, Teruhiko, deceased; Hoshina, Ikuko, heir; Hoshina, Aya, heir; and Hoshina, Ken-Nosuke, heir, 4,469,619, Cl. 252-301.40R.
Hoshina, Ikuko, heir: *See*—
Ohno, Katsutoshi; Abe, Tomohiko; Hoshina, Teruhiko, deceased; Hoshina, Ikuko, heir; Hoshina, Aya, heir; and Hoshina, Ken-Nosuke, heir, 4,469,619, Cl. 252-301.40R.
Hoshina, Ken-Nosuke, heir: *See*—
Ohno, Katsutoshi; Abe, Tomohiko; Hoshina, Teruhiko, deceased; Hoshina, Ikuko, heir; Hoshina, Aya, heir; and Hoshina, Ken-Nosuke, heir, 4,469,619, Cl. 252-301.40R.
Hoshina, Teruhiko, deceased: *See*—
Ohno, Katsutoshi; Abe, Tomohiko; Hoshina, Teruhiko, deceased; Hoshina, Ikuko, heir; Hoshina, Aya, heir; and Hoshina, Ken-Nosuke, heir, 4,469,619, Cl. 252-301.40R.
Hosli, Peter, to Institut Pasteur. Process of in vitro diagnosis of cystic fibrosis. 4,469,788, Cl. 435-18.000.
Hosoe, Kazuya: *See*—
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,469,417, Cl. 354-404.000.
Hosomizu, Hiroshi: *See*—
Ishida, Tokuji; and Hosomizu, Hiroshi, 4,469,419, Cl. 354-127.100.
Hosoya, Masahiro: *See*—
Nosaki, Takefumi; and Hosoya, Masahiro, 4,469,435, Cl. 355-15.000.
Hospal-Sodip SA: *See*—
Pusineri, Christian; and Goletto, Jean, 4,469,827, Cl. 524-27.000.
Hostettler, Fritz. Low temperature, storage stable mixtures of polyester prepolymers and flow modifiers. 4,469,616, Cl. 252-182.000.
Hotz, Roger W. Fastening device. 4,469,466, Cl. 403-388.000.
Howard, John B.; and Gladow, Dean E., to Didde Graphic Systems Corporation. Feed and lock mechanism for multiple bar draped web collator and method. 4,469,266, Cl. 226-106.000.

Howes, Don E. Back-up guide for trucks or trailers. 4,469,277, Cl. 238-10.00R.
Hsu, Chao-Yang; and Lyons, James E., to Sun Tech, Inc. Palladium catalyzed oxy-acetylation of phenyl acetate to meta-acetoxyacetophenone. 4,469,883, Cl. 560-131.000.
Hubel, Werner: *See*—
Disteldorf, Josef; and Hubel, Werner, 4,469,867, Cl. 544-222.000.
Huffman, William F.; and Moore, Michael L., to SmithKline Beckman Corporation. Octapeptide vasopressin antagonists. 4,469,679, Cl. 424-177.000.
Huffman, William F.; and Moore, Michael L., to SmithKline Beckman Corporation. Iodinated vasopressin antagonists. 4,469,680, Cl. 424-177.000.
Huggins, James E.; Batt, Mary L.; and Kozarek, William J., to Procter & Gamble Company, The. Storage stable topical pharmaceutical composition containing zinc erythromycin and low dielectric solvents. 4,469,684, Cl. 424-181.000.
Hughes Aircraft Company: *See*—
Gulberg, Norman B.; and Busby, Richard J. (said Norman B. Gulberg assors. to), 4,468,858, Cl. 29-764.000.
Snyder, David E., 4,469,962, Cl. 307-450.000.
Williams, Austin M., 4,470,145, Cl. 375-1.000.
Hughes, James H., Jr.: *See*—
Hamilton, Daniel B.; and Hughes, James H., Jr., 4,469,020, Cl. 99-352.000.
Hughes, John J.; and Polk, Darryl R., to International Business Machines Corporation. Matrix printer with optimum printing velocity. 4,469,460, Cl. 400-322.000.
Hughes, Kenneth E.: *See*—
Coleman, Carl R.; and Hughes, Kenneth E., 4,469,101, Cl. 128-334.00R.
Hughes Tool Company: *See*—
Clark, David A., 4,469,172, Cl. 166-115.000.
Gilbert, Bruce; and Evans, Robert W., 4,469,173, Cl. 166-188.000.
McKenzie, Lee F., 4,469,518, Cl. 106-90.000.
Watkins, Bruce J., 4,469,136, Cl. 137-798.000.
Hukill, Charles A. Spark plug. 4,469,059, Cl. 123-169.0PA.
Hunter, James B., to Johnson Matthey, Inc. Heating element suitable for electric space heaters. 4,469,936, Cl. 219-543.000.
Huskey, Donald: *See*—
Galiasso Tailleur, Roberto E.; Salazar Guillen, Jose A.; Huskey, Donald; Morales, Alfredo L.; and Aquino, Luig G., 4,469,587, Cl. 208-61.000.
Husqvarna Aktiebolag: *See*—
Bergvall, Bengt A., 4,469,035, Cl. 112-158.00B.
Hutchins, Bruce A.; and Fay, Richard, to International Jensen Incorporated. Tape unit cleaning device. 4,470,089, Cl. 360-137.000.
Huys, Daniel J. G.: *See*—
Vandevelde, Leon E. J.; Baetsle, Leon H. J. M.; and Huys, Daniel J. G., 4,469,629, Cl. 252-631.000.
Hydril Company: *See*—
Turner, Edwin C., 4,469,180, Cl. 166-324.000.
Iannacchione, Anthony T.; Lawhead, David H.; and Perry, John H., to United States of America, Interior. Remote sequential gas sampler for blasting areas. 4,468,973, Cl. 73-863.010.
Ibar, Jean-Pierre. Method and apparatus for transforming the physical characteristics of a material by controlling the influence of rheological parameters. 4,469,649, Cl. 264-23.000.
IBP, Inc.: *See*—
Chittenden, Jimmie A., 4,468,839, Cl. 17-51.000.
Ichidate, Minoru; and Kubo, Toshihiko, to Sumitomo Metal Industries. Apparatus for production of metal powder. 4,469,313, Cl. 266-207.000.
Ichikawa, Akira: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Ichikawa, Akira; Kitasei, Yasuzi; and Hidaka, Akira, 4,470,124, Cl. 364-571.000.
Iioka, Isao; Yamagishi, Keiiti; Sato, Hiroshi; and Suganuma, Nobuo, to Lion Corporation. Oral composition. 4,469,673, Cl. 424-50.000.
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiroma, to Kissei Pharmaceutical Co., Ltd.; and Ono Pharmaceutical Co., Ltd. 1,3-Disubstituted imidazoles. 4,469,865, Cl. 548-341.000.
Ikeda, Masaki: *See*—
Nishino, Atsushi; Kimura, Kunio; Ikeda, Masaki; and Oyabu, Hajime, 4,469,798, Cl. 501-14.000.
Ikegami, Shinzi; and Tezuka, Koichi, to Nissan Motor Company, Limited. Intake port of internal combustion engine. 4,469,062, Cl. 123-306.000.
Ikeguchi, Nobuyuki: *See*—
Gaku, Morio; and Ikeguchi, Nobuyuki, 4,469,859, Cl. 528-159.000.
Ikemori, Keiji: *See*—
Tajima, Akira; and Ikemori, Keiji, 4,469,412, Cl. 350-426.000.
Ikesue, Isao, to Sharp Kabushiki Kaisha. Common transfer contact for liquid crystal display cell or electrochromic display cell. 4,469,410, Cl. 350-343.000.
Imai, Satoshi: *See*—
Tsuruoka, Takashi; Imai, Satoshi; Satoh, Atsuyuki; Watanabe, Tetsuro; Watanabe, Koji; Inouye, Shigeharu; and Niida, Taro, 4,469,643, Cl. 260-502.50G.
IMEC Corporation: *See*—
Curtiss, William P.; and Sharp, Gordon P., 4,469,997, Cl. 318-729.000.
Imperial Chemical Industries PLC: *See*—
Cooper, Richard R., 4,469,855, Cl. 526-106.000.
Pinto, Alwyn, 4,469,665, Cl. 423-359.000.
Inaba, Masahito: *See*—
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,469,437, Cl. 355-68.000.
Inagaki, Koichi: *See*—
Yata, Yukio; Inagaki, Koichi; and Yatabe, Yoshio, 4,469,402, Cl. 350-128.000.
Inagaki, Makoto, to Techno Venture Co., Ltd. Cold air microwave drying apparatus. 4,468,865, Cl. 34-1.000.
Inagaki, Takashi; Wakatsuki, Goroei; and Kimura, Shigeo, to Honda Giken Kogyo Kabushiki Kaisha. Breather ventilation system of power-transmission casing for use in motorcycle. 4,468,979, Cl. 74-606.00R.
Inai, Kenji: *See*—
Takashima, Masaru; Matsuyama, Shigeru; Hayashi, Yoshihiro; Ito, Hisaji; Fujita, Kotaro; Inai, Kenji; and Takemoto, Shoji, 4,469,309, Cl. 266-44.000.
Industrie Pirelli S.p.A.: *See*—
Robicci, Pier L., 4,469,745, Cl. 428-283.000.
Inokuti, Yukio; Ito, Yo; and Shimanaka, Hiroshi, to Kawasaki Steel Corporation. Method of producing grain oriented silicon steel sheets or strips having high magnetic induction and low iron loss. 4,469,533, Cl. 148-111.000.
Inoue, Eiichi; and Shimizu, Isamu, to Fuji Photo Film Co., Ltd. Radiation-sensitive tube using photoconductive layer composed of amorphous silicon. 4,469,985, Cl. 313-366.000.
Inoue, Hitoshi, to Toyo Kogyo Co., Ltd. Front suspension for front wheel drive vehicle. 4,469,350, Cl. 280-675.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,469,650, Cl. 264-27.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Special carbon material. 4,469,650, Cl. 264-27.000.
Inoue, Tomoya: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Inoue, Yasuo: *See*—
Takeda, Tooru; Hayakawa, Masakatsu; and Inoue, Yasuo, 4,468,947, Cl. 72-467.000.
Inouye, Shigeharu: *See*—
Tsuruoka, Takashi; Imai, Satoshi; Satoh, Atsuyuki; Watanabe, Tetsuro; Watanabe, Koji; Inouye, Shigeharu; and Niida, Taro, 4,469,643, Cl. 260-502.50G.
Inowa, Shigeru: *See*—
Yamazaki, Yoshio; Gunzi, Kouichi; and Inowa, Shigeru, 4,469,434, Cl. 355-15.000.
Institut Pasteur: *See*—
Hosli, Peter, 4,469,788, Cl. 435-18.000.
Institut Tehnickih Nauka Srpsfe Akademije Nauka I Umetnosti: *See*—
Bilen, Branislav J., 4,469,041, Cl. 114-144.00R.
International Business Machines Corporation: *See*—
Chase, Brian D., 4,470,029, Cl. 335-210.000.
Disbrow, John R.; Eiselen, Everett T.; Findley, Gerald I.; Luning, Stephen G.; and Wang, David T., 4,470,129, Cl. 364-900.000.
Galetto, Louis V.; and Rakes, James M., 4,470,056, Cl. 346-154.000.
Higdon, John M., 4,470,128, Cl. 364-900.000.
Hughes, John J.; and Polk, Darryl R., 4,469,460, Cl. 400-322.000.
Irwin, John W., 4,469,026, Cl. 101-426.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,469,892, Cl. 568-382.000.
Munteanu, Marina A.; Oltarzewski, Edward S.; Shechter, Leon; and Warren, Craig B., 4,469,613, Cl. 252-92.000.
International Jensen Incorporated: *See*—
Hutchins, Bruce A.; and Fay, Richard, 4,470,089, Cl. 360-137.000.
International Paper Company: *See*—
McCown, Jack R.; and Firth, J. Rogers, 4,468,993, Cl. 83-112.000.
Ritter, Dale L., 4,469,224, Cl. 206-335.000.
International Standard Electric Corporation: *See*—
Goatcher, John K., 4,470,147, Cl. 375-77.000.
Uebel, Helmut, 4,469,298, Cl. 246-249.000.
International Telephone and Telegraph Corporation: *See*—
Butler, Ronald G.; and Lehman, John R., 4,469,016, Cl. 92-128.000.
Intevep, S.A.: *See*—
Galiasso Tailleur, Roberto E.; Salazar Guillen, Jose A.; Huskey, Donald; Morales, Alfredo L.; and Aquino, Luig G., 4,469,587, Cl. 208-61.000.
Inwood, Texas V.; Wight, Carlyle G.; and Koepke, Jeffery W., to Union Oil Company of California. Process for producing and extracting C_2 to C_6 alcohols. 4,469,905, Cl. 568-899.000.
Iowa State University Research Foundation: *See*—
Harris, Delbert L., 4,469,672, Cl. 424-23.000.
Irie, Toshio: *See*—
Takeuchi, Tsutomu; Nishi, Mineo; Irie, Toshio; and Ryuto, Hirotaka, 4,469,882, Cl. 560-25.000.
Irwin, John W., to International Business Machines Corporation. Method and apparatus for controlling drying and detaching of printed material. 4,469,026, Cl. 101-426.000.
Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., to Excello Specialty Company, The. Water deflector for vehicle doors. 4,469,732, Cl. 428-80.000.
Ishibe, Nobuyuki; Richey, Warren F.; and Wing, Milton S., to Dow Chemical Company, The. Stable metal pigment compositions employing methylchloroform as solvent. 4,469,520, Cl. 106-291.000.
Ishida, Kozo: *See*—
Tanaka, Masaru; Noguchi, Naoki; and Ishida, Kozo, 4,469,946, Cl. 250-373.000.

Ishida, Tokuji; and Hosomizu, Hiroshi, to Minolta Camera Kabushiki Kaisha. Electronic flash device. 4,469,419, Cl. 354-127.100.

Ishigami, Kazuhiro; and Yuzawa, Haruo, to Nissan Motor Company, Limited. Engine vibration transmission structure. 4,468,950, Cl. 73-35.000.

Ishihara, Toshikazu; Kitaso, Tomoyuki; Maeda, Kenji; and Shinzato, Toru, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Maeda, Kenji. Blood purification apparatus. 4,469,593, Cl. 210-96.200.

Ishii, Yasuo, to United States Gypsum Company. Method for forming embossed acoustical tile. 4,469,656, Cl. 264-87.000.

Ishikawa, Soichi; and Tokui, Masaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of and apparatus for inspecting the quality of a casting produced by a die-casting machine. 4,469,164, Cl. 164-457.000.

Ishikawa, Takatoshi; and Nakamura, Takashi, to Fuji Photo Film Co., Ltd. Processing for silver halide color photographic materials. 4,469,781, Cl. 430-393.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Takeuchi, Osamu; and Aizawa, Akira, 4,469,314, Cl. 266-252.000.

Ishiwata, Mamoru; and Minoda, Minoru, to Fuji Photo Film Co., Ltd. Coating method for having simultaneous separate extrudable multiple coatings with laterally spaced separators. 4,469,782, Cl. 430-502.000.

Isobe, Toshiaki: *See*—
Kobayashi, Nobuyuki; Isobe, Toshiaki; and Fukuda, Teruo, 4,469,073, Cl. 123-492.000.

Isono, Masaru, to Tokyo Kogaku Kikai Kabushiki Kaisha. Automatic focusing means for an ophthalmoscopic instrument. 4,469,416, Cl. 351-206.000.

Isshiki, Saburo; and Abura, Yoshinori, to Matsushita Electric Works, Ltd. Electrically heated hair curling brush with selectively rotatable handle. 4,469,934, Cl. 219-222.000.

Ita, Callixtus E.; Heald, Anthony F.; and Egli, Peter, to E. R. Squibb & Sons, Inc. Nitrobenzofuran derivatives. 4,469,870, Cl. 546-199.000.

Itikawa, Koozi, to Fuji Photo Film Co., Ltd. Print mask switching device. 4,469,438, Cl. 355-74.000.

ITM International Tool Machines Inc.: *See*—
Giebmanns, Karl H., 4,468,891, Cl. 51-95.0WH.
Giebmanns, Karl H., 4,468,892, Cl. 51-99.000.

Ito, Hisaji: *See*—
Takashima, Masaru; Matsuyama, Shigeru; Hayashi, Yoshihiro; Ito, Hisaji; Fujita, Kotaro; Inai, Kenji; and Takemoto, Shoji, 4,469,309, Cl. 266-44.000.

Ito, John M.; and Cotton, James D., to Kimberly-Clark Corporation. Combination carton and shipping package, dispensing system therefor. 4,469,243, Cl. 221-34.000.

Ito, Michio: *See*—
Kitamura, Takashi; and Ito, Michio, 4,469,767, Cl. 430-31.000.

Ito, Takato: *See*—
Fukuda, Katsuaki; and Ito, Takato, 4,469,610, Cl. 252-62.200.

Ito, Tatsuo; Murata, Tadao; Horiuchi, Miyoshi; and Goto, Masahiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing the peripheral wall of a tank for an oil-immersed electric apparatus. 4,469,269, Cl. 228-173.00C.

Ito, Yo: *See*—
Inokuti, Yukio; Ito, Yo; and Shimanaka, Hiroshi, 4,469,533, Cl. 148-111.000.

Itoh, Hiroshi: *See*—
Kobayashi, Nobuyuki; and Itoh, Hiroshi, 4,469,072, Cl. 123-491.000.

Itoh, Masaaki; Tanaka, Takeo; Hayashi, Masakatsu; Kudo, Mituo; and Tomita, Akira, to Hitachi, Ltd. Heat exchanger fin. 4,469,167, Cl. 165-151.000.

Itoh, Masaaki; Kodoh, Mituo; Tomita, Akira; Hayashi, Masakatsu; and Tanaka, Takeo, to Hitachi, Ltd. Fin assembly for heat exchangers. 4,469,168, Cl. 165-152.000.

ITT Industries, Inc.: *See*—
Alexander, John H., 4,470,098, Cl. 361-321.000.
Birkenbach, Alfred, 4,469,378, Cl. 303-22.00R.
Groeneweg, Adrianus, 4,468,964, Cl. 73-259.000.
Stoka, Roberto; and Kley, Uwe, 4,469,205, Cl. 188-234.000.

Ive, John G. S., to Sony Corporation. Data processing. 4,470,142, Cl. 371-2.000.

Ivorra, Claude, to Phenol Engineering Societe A Responsabilitee Limitee. Solar heated building structure and method of operating a solar-heat collector system. 4,469,086, Cl. 126-400.000.

Iwaki, Yoshiyuki; and Matsumoto, Akio, to Mitsubishi Denki Kabushiki Kaisha. Electric generator for use with vehicles. 4,469,966, Cl. 310-62.000.

Iwano, Haruhiko: *See*—
Hirai, Hiroyuki; Nakamura, Koichi; and Iwano, Haruhiko, 4,469,780, Cl. 430-373.000.

Iwao, Noriyuki: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Tsutsui, Eiji; and Iwao, Noriyuki, 4,469,428, Cl. 355-3.0CH.

Iwasaki, Kishiro: *See*—
Nakano, Fumio; Iwasaki, Kishiro; and Tanno, Seikichi, 4,469,409, Cl. 350-341.000.

Iwase, Satoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Drying apparatus. 4,468,867, Cl. 34-82.000.

Iwayanagi, Takao; Kohashi, Takahiro; Nonogaki, Saburo; and Hatano, Yoshio, to Hitachi, Ltd. Pattern formation method utilizing deep UV radiation and bisazide composition. 4,469,778, Cl. 430-325.000.

Iyengar, Doreswamy R., to BASF Wyandotte Corporation. Soft textured high strength Alkali Blue pigment. 4,469,519, Cl. 106-288.00Q.

Izumi, Toshihiro: *See*—
Komai, Takeshi; Izumi, Toshihiro; and Suyama, Syuji, 4,469,862, Cl. 528-271.000.

Izumiya, Shunzo: *See*—
Obara, Haruki; and Izumiya, Shunzo, 4,469,927, Cl. 219-69.00C.

J. T. Baker Chemical Co.: *See*—
Flashner, Michael, 4,469,630, Cl. 260-112.00B.

Jackson Jordan, Inc.: *See*—
Bradshaw, Bruce W., 4,468,966, Cl. 73-636.000.

Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., to V.G.A.S., Inc. Vaporous gasoline fuel system and control therefor. 4,469,075, Cl. 123-523.000.

Jacmorr Manufacturing Limited: *See*—
Fler, Jack P.; and Baxter, Alan R., 4,469,384, Cl. 312-333.000.

Jacobs, Jerome D.: *See*—
McCartney, William J.; Jacobs, Jerome D.; and Keil, Mitchel J., 4,469,765, Cl. 429-123.000.

Jacobs, Mieke: *See*—
Buckinx, Pol; and Jacobs, Mieke, 4,470,026, Cl. 333-194.000.

Jaecker, John A.: *See*—
Yoo, Jin S.; and Jaecker, John A., 4,469,589, Cl. 208-120.000.

Jaeschke, Ralph L., to Eaton Corporation. Cooling system for dynamoelectric machine. 4,469,968, Cl. 310-105.000.

Jager, Gerhard; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. 1-Iodoprop-1-yn-3-ols as plant protection agents. 4,469,902, Cl. 568-812.000.

Jain, Aloke K.: *See*—
Lukens, James E.; Jain, Aloke K.; and Mankiewich, Paul M., 4,470,023, Cl. 331-107.0S.

James, James R.; and Cryderman, W. G., to Accuratio Systems Inc. Adjustable orifice for reaction injection molding. 4,469,130, Cl. 137-606.000.

Jamet, Daniel: *See*—
Petit, Andre ; and Jamet, Daniel, 4,469,385, Cl. 339-14.00R.

Japan Broadcasting Corp.: *See*—
Mino, Mitsuo, 4,470,067, Cl. 358-174.000.

Japan Crown Cork Co., Ltd.: *See*—
Reich, Frederich R., 4,469,442, Cl. 356-364.000.

Japan Electronic Industry Development Association: *See*—
Kato, Hiroaki; Kishi, Kohhei; and Takafuji, Yutaka, 4,469,568, Cl. 204-35.100.

Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Bearing device for a lengthwise-displaceable and pivotable telescoping tube. 4,469,371, Cl. 296-223.000.

Jaspers, Hans: *See*—
van der Hauw, Tjerk; and Jaspers, Hans, 4,469,575, Cl. 204-159.190.

Jeblick, Werner: *See*—
Bruck, Dieter W.; Jeblick, Werner; and Ruetz, Lothar, 4,469,830, Cl. 524-109.000.

Jenkins, Alfred D.; and Heaton, William E., to NCR Corporation. Priority interrupt controller. 4,470,111, Cl. 364-200.000.

Jenkins, John W.: *See*—
Murrer, Barry A.; and Jenkins, John W., 4,469,849, Cl. 525-339.000.

Jerman, Daniel L. Rail fastening system for use with shoulder fitted concrete ties. 4,469,278, Cl. 238-349.000.

Jernigan, Robert T., to Dow Chemical Company, The. Purifying geothermal steam. 4,468,929, Cl. 60-641.200.

Jersey Nuclear-Avco Isotopes, Inc.: *See*—
McAllister, Gary L., 4,469,991, Cl. 315-246.000.

Jeske, Helmfried: *See*—
Spiegelberg, Karl; Hoffmann, Herbert; Jeske, Helmfried; Kolm, Alexander; and Ebeling, Fred, 4,469,932, Cl. 219-121.0PA.

Jessop, Daniel H.: *See*—
Wade, Robert M.; Benjamin, George N.; Solomon, Marwick H.; and Jessop, Daniel H., 4,469,538, Cl. 156-51.000.
Wade, Robert M.; Benjammin, George N.; Solomon, Marwick H.; and Jessop, Daniel H., 4,469,539, Cl. 156-51.000.

Jinbo, Kensaku: *See*—
Yamasaki, Toshihiro; and Jinbo, Kensaku, 4,468,955, Cl. 73-117.000.

Jo, Pan D.: *See*—
Onishi, Sigeru; Jo, Souk H.; Jo, Pan D.; and Kato, Satoshi, 4,469,054, Cl. 123-73.00R.

Jo, Souk H.: *See*—
Onishi, Sigeru; Jo, Souk H.; Jo, Pan D.; and Kato, Satoshi, 4,469,054, Cl. 123-73.00R.

Johansen, Roy W., to Allis-Chalmers Corp. Twin clutch pack for power shift transmission. 4,468,980, Cl. 74-705.000.

John D. Brush & Co., Inc.: *See*—
Beattie, Patrick J.; Shaffer, Douglas E.; and Sylvester, Richard J., 4,468,943, Cl. 70-302.000.

John Ellis Enterprises: *See*—
Young, Leroy D., Jr., 4,468,997, Cl. 84-1.010.

John, Gunther, to Minnesota Mining and Manufacturing Company. Two component system for the production of a synthetic resin compound capable of curing in the absence of moisture containing a polyisocyanate, a polyenamine, and a carrier compound having water aggregated thereto. 4,469,857, Cl. 528-59.000.

Johnson, George A.: *See*—
Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., 4,469,848, Cl. 252-106.000.

Johnson Matthey & Co., Limited: *See*—
Murrer, Barry A.; and Jenkins, John W., 4,469,849, Cl. 525-339.000.
Stephenson, David J.; Heywood, Alan E.; and Selman, Gordon L., 4,469,666, Cl. 423-376.000.

Johnson Matthey, Inc.: *See*—
Hunter, James B., 4,469,936, Cl. 219-543.000.

Johnson, Peter D., to General Electric Company. Fluorescent lamp with non-scattering phosphor. 4,469,980, Cl. 313-25.000.

Johnson, Thomas H., to Shell Oil Company. Niobium or tantalum/halogen-containing catalyst regeneration process. 4,469,804, Cl. 502-32.000.

Johnson, Wallace E., to Concentration Specialists, Inc. Freeze crystallization subassembly. 4,468,930, Cl. 62-71.000.

Jokisch, Friedrich; and Heinrichs, Bernhard, to Krupp-Koppers GmbH. Container for transporting hot coke. 4,469,559, Cl. 202-270.000.

Jolly, Brian J., to Polycell Products Limited. Double glazing arrangement. 4,468,889, Cl. 49-453.000.

Jones, Donald W.; and Gabor, Michael J., to Marion Laboratories. Rack for developing multiple chromatograms. 4,469,660, Cl. 422-70.000.

Jones, Hurshel L. Automatic centering pipe beveling machine. 4,469,310, Cl. 266-56.000.

Jones, John A.; and West, Michael S., to Xerox Corporation. Recirculation document handling methods and apparatus and copiers incorporating such apparatus. 4,469,436, Cl. 355-51.000.

Jones, Wallace R.: *See*—
Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., 4,469,732, Cl. 428-80.000.

Jordan, Friedrich, to Klockner-Humboldt-Deutz Aktiengesellschaft. Gastight, undetachable connection of two metal parts. 4,469,060, Cl. 123-193.0CH.

Joris, Norbert, to Pirzer Co. Labelling station of a labelling machine. 4,469,548, Cl. 156-567.000.

Jorzyk, Sigurd; Meyer, Willy; and Splicthoff, Heinz, to Saarbergwerke AG. Process and plant for generating electrical energy. 4,468,923, Cl. 60-39.020.

Joy Manufacturing Company: *See*—
Goodboy, George O., 4,469,446, Cl. 366-342.000.

Jumel, Bernard: *See*—
Herbulot, Jean; and Jumel, Bernard, 4,469,203, Cl. 188-218.0XL.

Jungwirth, Dieter; Schnitzler, Lorenz; Mannhart, Alto; and Wlodkowski, Johann, to Dyckerhoff & Widmann Aktiengesellschaft. Method of and apparatus for forming an outwardly projecting bulge in a steel wire strand for forming an anchor in concrete. 4,469,756, Cl. 428-592.000.

Juntgen, Harald: *See*—
Peters, Werner; Juntgen, Harald; Van Heek, Karl H.; Kirchhoff, Reinhold; and Wagener, Heinrich, 4,469,487, Cl. 48-86.00R.

Kabe, Kazuyuki; and Morikawa, Tsuneo, to Yokohama Rubber Co., Ltd., The. Pneumatic tire. 4,469,158, Cl. 152-354.00R.

Kabe, Kazuyuki: *See*—
Morikawa, Tsuneo; and Kabe, Kazuyuki, 4,469,157, Cl. 152-354.00R.

Kabushiki Kaisha Kito: *See*—
Nakamura, Takayoshi; Maeda, Kazuo; Ohno, Masayuki; and Akiyama, Teruo, 4,469,308, Cl. 254-350.000.

Kabushiki Kaisha Saginomiya Seisakusho: *See*—
Kanai, Yoshikazu; and Ohira, Hideaki, 4,469,134, Cl. 137-625.430.

Kabushiki Kaisha Toshiba: *See*—
Mori, Ichiro; Sugihara, Kazuyoshi; Shinozaki, Toshiaki; and Tojo, Toru, 4,469,949, Cl. 250-491.100.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Ishihara, Toshikazu; Kitano, Tomoyuki; Maeda, Kenji; and Shinzato, Toru, 4,469,593, Cl. 210-96.200.

Kaeding, Warren W.: *See*—
Forbus, Nancy P.; and Kaeding, Warren W., 4,469,806, Cl. 502-62.000.

Kaeser, Charles. Skin massaging device with simultaneous application of a cosmetic product. 4,469,094, Cl. 128-65.000.

Kageyama, Junichi: *See*—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,752, Cl. 428-475.800.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,753, Cl. 428-475.800.

Kah, Carl L. C., Jr. Pulse actuated solenoid valve. 4,469,304, Cl. 251-65.000.

Kai, Rikiya: *See*—
Ueda, Ikuo; and Kai, Rikiya, 4,469,624, Cl. 252-513.000.

Kain, Don S., to Monarch Mirror Door Co., Inc. Process for laminating mirror with protective backing and product resulting therefrom. 4,469,737, Cl. 428-198.000.

Kaisaku, Tetsuo: *See*—
Yokoi, Masatada; Kondo, Toshio; Katagiri, Masayoshi; Kaisaku, Tetsuo; and Mizuno, Yoji, 4,469,337, Cl. 277-212.0FB.

Kajiwara, Toshiro: *See*—
Tsuchihashi, Michihiro; Anzai, Yoshinori; Kajiwara, Toshiro; and Saikatsu, Takeo, 4,469,986, Cl. 313-610.000.

Kalla, Alec K. Firewood carrier. 4,469,363, Cl. 294-154.000.

Kaltenbach, Karl W.: *See*—
Bernier, John A.; Kunselman, Garry C.; and Kaltenbach, Karl W., 4,469,441, Cl. 356-316.000.

Kamada, Hiroshi: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.

Kamata, Kazuo, to Fuji Photo Film Co., Ltd. Camera with pivotable back door and slidable film loading door. 4,469,421, Cl. 354-212.000.

Kamata, Minoru: *See*—
Sakamoto, Masayoshi; and Kamata, Minoru, 4,470,087, Cl. 360-105.000.

Kamezaki, Yasushi: *See*—
Nakazawa, Toru; Fushida, Akira; and Kamezaki, Yasushi, 4,469,769, Cl. 430-78.000.

Kamijo, Tetsuhide: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,469,865, Cl. 548-341.000.

Kaminishi, Tokishi, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Microvibration detector using a single piezoelectric element as both sensor and alarm generator. 4,470,040, Cl. 340-566.000.

Kamogawa, Masatake: *See*—
Kato, Masaaki; Kamogawa, Masatake; Nakano, Toshiharu; and Furuse, Junji, 4,469,810, Cl. 502-209.000.

Kamstra, Paulus R.: *See*—
Lissenburg, Rokus C. D.; and Kamstra, Paulus R., 4,469,482, Cl. 604-187.000.

Kanai, Takeshi: *See*—
Mashimo, Katsuyuki; Masuda, Teruo; Nakayama, Toshio; Hashimoto, Masuyuki; and Kanai, Takeshi, 4,468,934, Cl. 62-495.000.

Kanai, Yoshikazu; and Ohira, Hideaki, to Kabushiki Kaisha Saginomiya Seisakusho. Four-way valve for reversible refrigeration cycle. 4,469,134, Cl. 137-625.430.

Kanamura, Tomotsugu: *See*—
Shibata, Kunio; Kanamura, Tomotsugu; and Nakamura, Tunehiko, 4,468,921, Cl. 57-333.000.

Kanat, Yasar: *See*—
Schaulin, Jean-Michel; Gantin, Robert; and Kanat, Yasar, 4,469,005, Cl. 89-33.140.

Kanayama, Katsumi, to Olympus Optical Co., Ltd. Cue signal-recording apparatus. 4,470,085, Cl. 360-72.100.

Kanbara, Masahiro: *See*—
Arai, Masaaki; Kanbara, Masahiro; and Morio, Minoru, 4,470,076, Cl. 358-312.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakayama, Takehisa, 4,468,948, Cl. 73-19.000.

Kaneko, Takashi: *See*—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,752, Cl. 428-475.800.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,753, Cl. 428-475.800.

Kaneyasu, Masataka; and Hara, Tadanori, to Nippon Steel Chemical Co., Ltd. Method for manufacture of phthalic anhydride. 4,469,878, Cl. 549-248.000.

Kango Wolf Power Tools Limited: *See*—
Badcock, David N. W., 4,469,924, Cl. 200-157.000.

Kantor, Frederick W. Fluid transport conduit system in equilibrium with its environment. 4,469,596, Cl. 210-137.000.

Kardys, Joseph A., to Pfizer Inc. Intermediates for production of benzothiazine carboxamides. 4,469,866, Cl. 544-14.000.

Karvonen, Gary E. Side hammer percussion lock. 4,468,877, Cl. 42-70.00F.

Kashihara, Jo.; and Oda, Etsusuke, to Namba Press Works Co., Ltd. Automotive seat. 4,469,374, Cl. 297-284.000.

Kasuga, Muneo: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,469,323, Cl. 271-288.000.

Katagiri, Masayoshi: *See*—
Yokoi, Masatada; Kondo, Toshio; Katagiri, Masayoshi; Kaisaku, Tetsuo; and Mizuno, Yoji, 4,469,337, Cl. 277-212.0FB.

Katagiri, Shigenobu: *See*—
Kozawa, Hiroomi; Nishino, Shinichi; and Katagiri, Shigenobu, 4,469,453, Cl. 384-117.000.

Katcher, Jay H.; and DelValle, Frank, to General Foods Corporation. Dry instant pudding mix. 4,469,712, Cl. 426-579.000.

Kato, Hiroaki; Kishi, Kohhei; and Takafuji, Yutaka, to Sharp Kabushiki Kaisha; and Japan Electronic Industry Development Association. Method for making thin-film transistors. 4,469,568, Cl. 204-35.100.

Kato, Masaaki; Kamogawa, Masatake; Nakano, Toshiharu; and Furuse, Junji, to Mitsubishi Rayon Company Limited. Process for the calcination of phosphorus-molybdenum catalyst. 4,469,810, Cl. 502-209.000.

Kato, Osamu: *See*—
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,469,667, Cl. 423-447.100.

Kato, Ryochi. Capacitance sensor. 4,470,008, Cl. 324-61.00R.

Kato, Satoshi: *See*—
Onishi, Sigeru; Jo, Souk H.; Jo, Pan D.; and Kato, Satoshi, 4,469,054, Cl. 123-73.00R.

Kato, Taketoshi: *See*—
Morita, Hiroshi; Kato, Taketoshi; Washida, Hiroshi; and Onoe, Akira, 4,468,853, Cl. 29-572.000.

Kato, Toshikiyo, to Citizen Watch Company Limited. Drive system for electrochromic display cell. 4,469,449, Cl. 368-239.000.

Kato, Yoshito; Hashimoto, Toshio; and Kimura, Masatoshi, to Mitsubishi Denki Kabushiki Kaisha. Position detecting device. 4,470,108, Cl. 364-167.000.

Katsuyama, Harumi: *See*—
Kawamura, Kouichi; Sato, Hideo; and Katsuyama, Harumi, 4,469,864, Cl. 549-13.000.

Kaufer, Selma. Nursing garment. 4,468,816, Cl. 2-104.000.

Kawagoe, Nobukazu: *See*—
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,469,437, Cl. 355-68.000.
Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,468,996, Cl. 84-1.010.
Kawai, Shizuo: *See*—
Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Kawai, Shizuo, 4,469,069, Cl. 123-447.000.
Kawamura, Kouichi; Sato, Hideo; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Thiopyrylium compounds and photoconductive compositions containing said compounds. 4,469,864, Cl. 549-13.000.
Kawamura, Yuji: *See*—
Tsuruoka, Setsuo; Tasaka, Iehito; Kawamura, Yuji; Kimata, Shizuo; and Wabiko, Tatsuki, 4,469,615, Cl. 252-180.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo; Uda, Ryoji; and Yamamoto, Hitoshi, 4,469,052, Cl. 123-41.100.
Kawasaki Steel Corporation: *See*—
Inokuti, Yukio; Ito, Yo; and Shimanaka, Hiroshi, 4,469,533, Cl. 148-111.000.
Kawashima, Kazuyasu: *See*—
Hiraizumi, Kazuo; Shirato, Kozo; and Kawashima, Kazuyasu, 4,469,495, Cl. 55-189.000.
Kawauchi, Yoshikazu: *See*—
Sano, Reiji; Morita, Yasuyuki; Kawauchi, Yoshikazu; Kimura, Minoru; and Takahashi, Hidemi, 4,470,144, Cl. 372-61.000.
Kee, David F., to Singer Company, The. Method and arrangement for providing information to define the values of a set of parameters which characterize an element. 4,468,968, Cl. 73-708.000.
Keech, David A.; Kirchner, Robert T.; Vander Wal, Nicholas M.; Sorenson, John E.; and Driscoll, Mark D., to Armstrong International, Inc. Energy loss detection system. 4,468,962, Cl. 73-200.000.
Keehn, Philip M.; and Serino, Robert M., to Brandeis University. Process and automated device for laser-induced chemistry. 4,469,574, Cl. 204-159.00R.
Keeney, Michael G., to C. H. Heist Corporation. Quick release valve. 4,469,125, Cl. 137-467.000.
Keeton, Alvin R.; and Ciarelli, Philip A., Jr., to Westinghouse Electric Corp. Electromagnetic flow coupler. 4,469,471, Cl. 417-50.000.
Keil, Mitchel J.: *See*—
McCartney, William J.; Jacobs, Jerome D.; and Keil, Mitchel J., 4,469,765, Cl. 429-123.000.
Keiper Automobiltechnik GmbH & Co KG: *See*—
Pelz, Herbert, 4,469,376, Cl. 297-362.000.
Keiper U.S.A., Inc.: *See*—
Boyer, Daniel R., 4,469,375, Cl. 297-362.000.
Keith, Charles H.: *See*—
Browne, Colin L.; Keith, Charles H.; and Bohlander, Peter J., 4,469,112, Cl. 131-336.000.
Keith, Lawrence H.: *See*—
Garcia, David B.; Sorenson, Bruce A.; Keith, Lawrence H.; Harless, James M.; Walters, Douglas B.; and Prokopetz, Andrew T., 4,468,951, Cl. 73-38.000.
Kellett, Rodney, to Cameron Iron Works, Inc. Adjustable conductor guide assembly for sub-sea wells and methods and tools for adjustment thereof. 4,469,181, Cl. 166-341.000.
Kelley Company Inc.: *See*—
Driear, Joseph R., 4,468,946, Cl. 72-379.000.
Kelley, Orville; and Kelley, Vicki. Canopy-removable, portable. 4,469,114, Cl. 135-102.000.
Kelley, Vicki: *See*—
Kelley, Orville; and Kelley, Vicki, 4,469,114, Cl. 135-102.000.
Kelman, Charles D. Medical breathing apparatus. 4,469,097, Cl. 128-205.220.
Kenan, Ralph H., to St. Regis Paper Company. Multiwall pouch bag with vent strip. 4,470,153, Cl. 383-100.000.
Kendall, Clifford, to Hick Hargreaves & Company Limited. Method of and apparatus for vacuum drying of systems. 4,468,866, Cl. 34-15.000.
Kendall Company, The: *See*—
Van Overloop, Ronald R., 4,469,463, Cl. 401-134.000.
Kenmotsu, Isami: *See*—
Takahashi, Hideyuki; and Kenmotsu, Isami, 4,470,136, Cl. 369-77.100.
Kennecott Corporation: *See*—
Lopacki, John B.; and Emes, Harry R., 4,470,034, Cl. 338-332.000.
Kennedy, Ted, Jr., to Trenton Corporation, The. Protective system for underground pipes. 4,469,469, Cl. 405-157.000.
Kern, Mark T.; and Cinzori, Robert J., to Santa Barbara Research Center. Optical discriminating fire sensor. 4,469,944, Cl. 250-339.000.
Kerr Glass Manufacturing Corporation: *See*—
Parker, Jeremy L., 4,469,235, Cl. 215-295.000.
Kersen, Matthew F.: *See*—
Polis, Marjorie J.; Dirnberger, Linus R.; and Kersen, Matthew F., 4,469,199, Cl. 187-29.000.
Kersting, Darrel, to Nelson Industries, Inc. Modular engine manifold construction. 4,468,925, Cl. 60-322.000.
Keskey, William H.: *See*—
Snyder, Kenneth L., Jr.; Keskey, William H.; and Sarkar, Nitis, 4,469,611, Cl. 252-75.000.
Keyes, Marion A., IV; and Thompson, William L., to Babcock & Wilcox Company, The. Rate multiplier square root extractor with increased accuracy for transmitter applications. 4,470,019, Cl. 328-144.000.
Khan, Ausat A.; and Stewart, Charles W., to Du Pont de Nemours, E. I., and Company. Core/shell fluoropolymer compositions. 4,469,846, Cl. 525-72.000.
Kidde, Inc.: *See*—
Goodwine, Paul C., 4,469,186, Cl. 180-9.100.
Morrisette, Milton J., 4,469,153, Cl. 141-364.000.
Kilpela, Tauno B.: *See*—
Haataja, Bruce A.; Kilpela, Tauno B.; Krueger, Gordon P.; and Adams, Roy D., 4,469,216, Cl. 198-382.000.
Kimata, Shizuo: *See*—
Tsuruoka, Setsuo; Tasaka, Iehito; Kawamura, Yuji; Kimata, Shizuo; and Wabiko, Tatsuki, 4,469,615, Cl. 252-180.000.
Kimball International, Inc.: *See*—
Slaats, Mathew A.; Henriott, Jay M.; Hedinger, Paul R.; and Trinkel, Steven F., 4,469,382, Cl. 312-219.000.
Kimberly-Clark Corporation: *See*—
Ito, John M.; and Cotton, James D., 4,469,243, Cl. 221-34.000.
Kimberly-Clark Limited: *See*—
Minto, Mansoor A.; and Storey, Dennis G., 4,469,734, Cl. 428-134.000.
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Machata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, to Hitachi Shipbuilding & Engineering Co., Ltd. Method of continuously processing a band-shape material. 4,469,572, Cl. 204-129.460.
Kimura, Hiroshi: *See*—
Minami, Shunji; and Kimura, Hiroshi, 4,469,189, Cl. 180-219.000.
Kimura, Katsuhiko: *See*—
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,469,323, Cl. 271-288.000.
Kimura, Kenji, to Olympus Optical Co. Ltd. Circuit for detecting frequency modulated signal. 4,470,080, Cl. 360-30.000.
Kimura, Kunio: *See*—
Nishino, Atsushi; Kimura, Kunio; Ikeda, Masaki; and Oyabu, Hajime, 4,469,798, Cl. 501-14.000.
Kimura, Makoto; Tomino, Naoki; Magariyama, Kenichi; and Shiokama, Yoshiharu, to Nippon Kogaku K.K. Electric connector for camera. 4,469,422, Cl. 354-286.000.
Kimura, Masatoshi: *See*—
Kato, Yoshito; Hashimoto, Toshio; and Kimura, Masatoshi, 4,470,108, Cl. 364-167.000.
Kimura, Minoru: *See*—
Sano, Reiji; Morita, Yasuyuki; Kawauchi, Yoshikazu; Kimura, Minoru; and Takahashi, Hidemi, 4,470,144, Cl. 372-61.000.
Kimura, Shigeo: *See*—
Inagaki, Takashi; Wakatsuki, Goroei; and Kimura, Shigeo, 4,468,979, Cl. 74-606.00R.
Kimura, Yukihiro; and Nozaki, Shunkichi, to NGK Spark Plug Co., Ltd. Sintered silicon carbide materials having metallized surface and process for producing the same. 4,469,658, Cl. 419-9.000.
Kinetics Technology International Corporation: *See*—
van Weenen, Willem F., 4,469,494, Cl. 55-179.000.
Kings Electronics Co., Inc.: *See*—
LeVine, Donald J.; and Salvador, Victor L., 4,469,390, Cl. 339-95.00R.
Kingsbury, Charles M.; Beckwith, Bruce R.; Bares, Frank P.; and Gardner, Edward B., to Emhart Industries, Inc. Timing control system for glassware forming machine. 4,469,501, Cl. 65-158.000.
Kinoshita, Kiyoshi: *See*—
Amano, Katsumi; and Kinoshita, Kiyoshi, 4,470,038, Cl. 340-365.00S.
Kinoshita, Shozo, to Pioneer Electronic Corporation. Horn type loudspeaker. 4,469,921, Cl. 179-115.50H.
Kinugawa, Masumi: *See*—
Takao, Mitsunori; and Kinugawa, Masumi, 4,469,074, Cl. 123-492.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Jordan, Friedrich, 4,469,060, Cl. 123-193.0CH.
Kirchhoff, Reinhold: *See*—
Peters, Werner; Juntgen, Harald; Van Heek, Karl H.; Kirchhoff, Reinhold; and Wagener, Heinrich, 4,469,487, Cl. 48-86.00R.
Kirchner, Robert T.: *See*—
Keech, David A.; Kirchner, Robert T.; Vander Wal, Nicholas M.; Sorenson, John E.; and Driscoll, Mark D., 4,468,962, Cl. 73-200.000.
Kirk, Roy; and Herbert, Alan, to Andra Jewels Limited. Earring earfitting with primary and secondary locking means. 4,468,936, Cl. 63-12.000.
Kirschner, Alan S.: *See*—
Zupon, Michael A.; Sequeira, Joel A.; Kirschner, Alan S.; and Yuen, Pui-Ho, 4,469,228, Cl. 206-568.000.
Kis-Tamas, Attila; Mikite, Gyula; Csutak nee Jakucs, Erzsebet; and Kocsis, Laszlo , to Egyt Gyogyszervegyeszeti Gyar. Nitroalkanol derivatives and plant protecting agents containing the same. 4,469,703, Cl. 424-311.000.
Kishi, Kohhei: *See*—
Kato, Hiroaki; Kishi, Kohhei; and Takafuji, Yutaka, 4,469,568, Cl. 204-35.100.
Kiss, Gunter H. Process and apparatus for moulding articles from binder-containing organic fibrous mats. 4,469,655, Cl. 264-82.000.
Kissei Pharmaceutical Co., Ltd.: *See*—
Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,469,865, Cl. 548-341.000.

Kita, Nobuyuki: *See*—
Matsumoto, Hiroshi; and Kita, Nobuyuki, 4,469,776, Cl. 430-309.000.
Kitamura, Kazuhiko, to Aisin Seiki Kabushiki Kaisha. Signal generating device in response to the degree of opening of a throttle valve. 4,469,127, Cl. 137-554.000.
Kitamura, Mitsuhiro; Kobayashi, Kohroh; and Sugimoto, Shigetoki, to Nippon Electric Co., Ltd. Semiconductor laser having an etched mirror and a narrow stripe width, with an integrated photodetector. 4,470,143, Cl. 372-50.000.
Kitamura, Takashi; and Ito, Michio, to Canon Kabushiki Kaisha. Electrophotographic process capable of image overplay and apparatus therefor. 4,469,767, Cl. 430-31.000.
Kitano, Tomoyuki: *See*—
Ishihara, Toshikazu; Kitano, Tomoyuki; Maeda, Kenji; and Shinzato, Toru, 4,469,593, Cl. 210-96.200.
Kitasato Institute, The: *See*—
Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; and Hashimoto, Takashi, 4,469,685, Cl. 424-195.000.
Kitazei, Yasuzi: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Ichikawa, Akira; Kitazei, Yasuzi; and Hidaka, Akira, 4,470,124, Cl. 364-571.000.
Klahr, Erhard: *See*—
Bueltjer, Uwe; Horacek, Heinrich; Druschke, Wolfgang; Franzmann, Gernot; Klahr, Erhard; and Foerster, Hans-Juergen, 4,469,831, Cl. 524-112.000.
Klaucic, Luciano, to Danieli & C. Officine Meccaniche SpA. Dummy bars employing a quickly and automatically detachable end. 4,469,163, Cl. 164-446.000.
Kleemann, Axel: *See*—
Drauz, Karlheinz; Kleemann, Axel; Martens, Jurgen; Scherberich, Paul; and Effenberger, Franz, 4,469,876, Cl. 548-535.000.
Klein, Hans-Dieter: *See*—
Leonhardt, Joachim; Wagener, Bruno; Klein, Hans-Dieter; and Siefer, Wilfried, 4,468,970, Cl. 73-762.000.
Kleine, Richard A.: *See*—
Helle, Gordon W.; Adams, Homer C.; and Kleine, Richard A., 4,469,083, Cl. 126-61.000.
Kley, Uwe: *See*—
Stoka, Roberto; and Kley, Uwe, 4,469,205, Cl. 188-234.000.
Kliger, Isaac E.: *See*—
Phaneuf, Robert A.; and Kliger, Isaac E., 4,470,049, Cl. 343-17.10R.
Klinger, Liliana, to United States of America, Army. Method of protecting optical fibre against stress corrosion. 4,469,724, Cl. 427-54.100.
Klockner-Humboldt-Deutz AG: *See*—
Abelitis, Andris; and Hinterkeuser, Jakob, 4,469,664, Cl. 423-244.000.
Klose, Karl W.; and Benjamin, Gary H., to Cooper Tire & Rubber Company. Transfer ring for a tire building machine. 4,469,546, Cl. 156-406.200.
Klosiewicz, Daniel W., to Hercules Incorporated. Method for making a dicyclopentadiene thermoset polymer. 4,469,809, Cl. 502-117.000.
Knappe, Wolfgang-Reinhold: *See*—
Berger, Dieter; Braun, Franz; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; and Werner, Wolfgang, 4,469,789, Cl. 435-23.000.
Knifton, John F.; and Grigsby, Robert A., Jr., to Texaco Inc. Process for preparing alcohols from olefins and synthesis gas. 4,469,895, Cl. 568-454.000.
Ko, Allen W.: *See*—
Liu, Ping Y.; and Ko, Allen W., 4,469,838, Cl. 524-394.000.
Kobayashi, Kohroh: *See*—
Kitamura, Mitsuhiro; Kobayashi, Kohroh; and Sugimoto, Shigetoki, 4,470,143, Cl. 372-50.000.
Kobayashi, Nobuyuki; and Itoh, Hiroshi, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling the fuel-feeding rate of an internal combustion engine. 4,469,072, Cl. 123-491.000.
Kobayashi, Nobuyuki; Isobe, Toshiaki; and Fukuda, Teruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic fuel injecting method and device for internal combustion engine. 4,469,073, Cl. 123-492.000.
Kobayashi, Osamu, to Victor Company of Japan, Limited. Magnetic recording media comprising specific types of silicone lubricants in the magnetic layer thereof. 4,469,751, Cl. 428-447.000.
Kobayashi, Sadao: *See*—
Sekiguchi, Haruo; Sudoh, Kazufuyu; Kobayashi, Sadao; and Fukuda, Nobuhiro, 4,469,507, Cl. 75-0.5AA.
Kobayashi, Susumu, to Terumo Corporation. Apparatus for infusing medication. 4,469,481, Cl. 604-67.000.
Kobayashi, Tsuneki: *See*—
Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, 4,469,264, Cl. 226-74.000.
Kobori, Yasuhiro: *See*—
Wada, Masatoshi; Konaga, Nobuyuki; Nishiwaki, Kenichi; and Kobori, Yasuhiro, 4,469,714, Cl. 427-54.100.
Koch, Wilhelm, to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft. Window lifting mechanism, particularly for motor vehicles. 4,468,887, Cl. 49-352.000.
Kocsis, Laszlo : *See*—
Kis-Tamas, Attila; Mikite, Gyula; Csutak nee Jakucs, Erzsebet; and Kocsis, Laszlo , 4,469,703, Cl. 424-311.000.
Kodoh, Mituo: *See*—
Itoh, Masaaki; Kodoh, Mituo; Tomita, Akira; Hayashi, Masakatsu; and Tanaka, Takeo, 4,469,168, Cl. 165-152.000.
Koepke, Jeffery W.: *See*—
Inwood, Texas V.; Wight, Carlyle G.; and Koepke, Jeffery W., 4,469,905, Cl. 568-899.000.
Kofke, William A., Jr.; and Milson, Ilia, to Gulf Research & Development Company. Regeneration of filter clay with liquid methanol. 4,469,805, Cl. 502-33.000.
Kogure, Yoshio; and Komiya, Satoru, to Fuji Xerox Co., Ltd. Paper guide device of electrophotography copying machine. 4,469,322, Cl. 271-264.000.
Kohashi, Takahiro: *See*—
Iwayanagi, Takao; Kohashi, Takahiro; Nonogaki, Saburo; and Hatano, Yoshio, 4,469,778, Cl. 430-325.000.
Kohler Coating Machinery Corporation, The: *See*—
Kohler, Herbert B.; Kohler, John B.; and Kohler, Gordon A. E., 4,469,043, Cl. 118-63.000.
Kohler, Elke: *See*—
Pinck, Peter; and Kohler, Elke, 4,469,111, Cl. 131-281.000.
Kohler, Gordon A. E.: *See*—
Kohler, Herbert B.; Kohler, John B.; and Kohler, Gordon A. E., 4,469,043, Cl. 118-63.000.
Kohler, Herbert B.; Kohler, John B.; and Kohler, Gordon A. E., to Kohler Coating Machinery Corporation, The. Cleaning mechanism for coating control fluid nozzle. 4,469,043, Cl. 118-63.000.
Kohler, John B.: *See*—
Kohler, Herbert B.; Kohler, John B.; and Kohler, Gordon A. E., 4,469,043, Cl. 118-63.000.
Kohn, Rachel S., to Celanese Corporation. Dry blend thickening composition containing benzoquinone and polygalactomannan gum. 4,469,620, Cl. 252-315.300.
Kohryu Industrial Co. Ltd.: *See*—
Tsuruoka, Setsuo; Tasaka, Iehito; Kawamura, Yuji; Kimata, Shizuo; and Wabiko, Tatsuki, 4,469,615, Cl. 252-180.000.
Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, to Meinan Machinery Works, Inc. Tenderizing device. 4,469,154, Cl. 144-2.00R.
Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; and Hashimoto, Takashi, to Kitasato Institute, The. Process for producing interferon inducers. 4,469,685, Cl. 424-195.000.
Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Yamazaki, Yoshihiko; Yamamoto, Hitoshi; Furusawa, Kahei; Ejiri, Yoshihiro; and Nunokawa, Makoto, 4,469,401, Cl. 350-96.230.
Kolm, Alexander: *See*—
Spiegelberg, Karl; Hoffmann, Herbert; Jeske, Helmfried; Kolm, Alexander; and Ebeling, Fred, 4,469,932, Cl. 219-121.0PA.
Komai, Takeshi; Izumi, Toshihiro; and Suyama, Syuji, to Nippon Oil and Fats Co. Ltd. Polymeric diacyl peroxides. 4,469,862, Cl. 528-271.000.
Komaki, Toshihiro: *See*—
Matsui, Fumio; Sashida, Mitsuaki; Komaki, Toshihiro; and Yoshizawa, Atsushi, 4,469,424, Cl. 354-298.000.
Komatsubara, Yoshinobu: *See*—
Hamada, Takeshi; and Komatsubara, Yoshinobu, 4,469,662, Cl. 423-235.000.
Komine, Yoshio, to Canon Kabushiki Kaisha. Video system. 4,470,077, Cl. 358-335.000.
Komiya, Satoru: *See*—
Kogure, Yoshio; and Komiya, Satoru, 4,469,322, Cl. 271-264.000.
Komura, Akio: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Komuro, Yoneo, to Sharp Kabushiki Kaisha. Switching system in a combined microwave and convection cooking apparatus. 4,469,926, Cl. 219-10.55B.
Konaga, Nobuyuki: *See*—
Wada, Masatoshi; Konaga, Nobuyuki; Nishiwaki, Kenichi; and Kobori, Yasuhiro, 4,469,714, Cl. 427-54.100.
Konda, Koichi; and Shinohara, Shoji, to Mitsubishi Kinzoku Kabushiki Kaisha. Melting furnace of a rigid structure. 4,469,312, Cl. 266-99.000.
Kondo, Toshio: *See*—
Yokoi, Masatada; Kondo, Toshio; Katagiri, Masayoshi; Kaisaku, Tetsuo; and Mizuno, Yoji, 4,469,337, Cl. 277-212.0FB.
Konietzny, Alfred; Zagefka, Hans-Dieter; Rombusch, Konrad; and Bax, Hanns-Jorg, to Chemische Werke Huls AG. Amino-group bearing, low molecular weight 1,3-butadiene polymer for stabilizing plastics. 4,469,829, Cl. 524-103.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Okamoto, Yukio; Tarumi, Noriyoshi; and Ashida, Hisashi, 4,469,429, Cl. 355-3.0DD.
Tanaka, Shigeo; Onodera, Kaoru; and Fujimori, Noboru, 4,469,785, Cl. 430-572.000.
Yamazaki, Yoshio; Gunzi, Kouichi; and Inowa, Shigeru, 4,469,434, Cl. 355-15.000.
Konno, Seishi: *See*—
Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; and Hashimoto, Takashi, 4,469,685, Cl. 424-195.000.
Konomura, Yutaka, to Olympus Optical Co., Ltd. Suction control device for an endoscope. 4,469,090, Cl. 128-4.000.
Kopp, Walter; and Saalmueller, Karl-Heinz, to Siemens Aktiengesellschaft. Developing station for developing charge images generated on a charge image carrier. 4,469,427, Cl. 355-3.0DD.
Koppers Company, Inc.: *See*—
Leston, Gerd, 4,469,900, Cl. 568-774.000.
Leston, Gerd, 4,469,901, Cl. 568-781.000.

Korach, Malcolm, to PPG Industries, Inc. Permionic membrane electrolytic cell. 4,469,808, Cl. 502-101.000.

Korenberg, Jakob, to York-Shipley, Inc. Fast fluidized bed reactor and method of operating the reactor. 4,469,050, Cl. 422-4.00D.

Korner, Paul; Rest, Heinz; and Giese, Ralf, to Ford Motor Company. Motor vehicle with a vertically adjustable safety belt guide fitting. 4,469,352, Cl. 280-808.000.

Korsunsky, Iosif: *See*—
Grabbe, Dimitry; Bakermann, Johannes C. W.; Cosmo, Nicola; and Korsunsky, Iosif, 4,469,389, Cl. 339-75.0MP.

Korte, Gunnar, to Kortteen Konepaja G. Korte & Kni. Peat machine. 4,468,872, Cl. 37-3.000.

Kortteen Konepaja G. Korte & Kni: *See*—
Korte, Gunnar, 4,468,872, Cl. 37-3.000.

Kosan Teknova A/S: *See*—
Hansen, Frits P. U., 4,469,116, Cl. 137-39.000.
Hansen, Frits P. U., 4,469,117, Cl. 137-39.000.

Kosmachevsky, Vitaly M.: *See*—
Perevodchikov, Vladimir I.; Akimov, Pavel I.; Skibityansky, David A.; Shapenko, Valentina N.; Loginov, Lev V.; Shapiro, Alexandr L.; Yakovlev, Arkady N.; and Kosmachevsky, Vitaly M., 4,469,982, Cl. 313-293.000.

Kostikov, Valery I.: *See*—
Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.; Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I., 4,469,984, Cl. 313-348.000.

Kosuge, Shuichi, to Nippondenso Co., Ltd. Analog fuel consumption signal generator for vehicles. 4,470,035, Cl. 340-52.00R.

Kotera, Hiroaki: *See*—
Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, 4,470,072, Cl. 358-260.000.

Kotwica, Roland, to Societe Chimique des Charbonnages-CDF Chimie. Distribution device for multitubular exchangers. 4,469,169, Cl. 165-174.000.

Kotyuk, Bernard, Jr. Flexible belt with tread to aid turning. 4,469,379, Cl. 305-35.0EB.

Kouge, Shinichi: *See*—
Morishita, Mitsuharu; and Kouge, Shinichi, 4,470,004, Cl. 322-99.000.

Koumatsu, Yasutaka: *See*—
Hirata, Atsumi; Mitsui, Katsuyuki; and Koumatsu, Yasutaka, 4,470,078, Cl. 358-342.000.

Kovacs, Csaba A.: *See*—
Adin, Anthony; Kovacs, Csaba A.; and Machiele, Delwyn E., 4,469,773, Cl. 430-222.000.

Kowalski, Alexander; and Vogel, Martin, to Rohm and Haas Company. Sequential heteropolymer dispersion and a particulate material obtainable therefrom, useful in coating compositions as an opacifying agent. 4,469,825, Cl. 523-201.000.

Kozarek, William J.: *See*—
Huggins, James E.; Batt, Mary L.; and Kozarek, William J., 4,469,684, Cl. 424-181.000.

Kozawa, Hiroomi; Nishino, Shinichi; and Katagiri, Shigenobu, to Hitachi Koki Company, Limited. Rotary multi-mirror driving motor. 4,469,453, Cl. 384-117.000.

Kozima, Yasuyuki: *See*—
Nakamura, Kozo; and Kozima, Yasuyuki, 4,470,073, Cl. 358-261.000.

Krause, Kenneth W.: *See*—
Rielley, Ronald A.; Krause, Kenneth W.; and Fishter, Steve G., 4,469,710, Cl. 426-541.000.

Krause, Rudolf; and Sapp, Gunter, to "Rhewum" Rheinische Werkzeug- und Maschinenfabrik GmbH. Power sieve with screen beaters. 4,469,592, Cl. 209-322.000.

Kremer, Henry A. F. L.: *See*—
Cukier, Samuel; and Kremer, Henry A. F. L., 4,469,585, Cl. 208-39.000.

Krich, Claudia A.; and Brinton, Keith. Baby carrier. 4,469,259, Cl. 224-160.000.

Krieg, Rudolf, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. Combined direct-indirect lighting photographic scene illumination device. 4,470,103, Cl. 362-17.000.

Kritchevsky, Gina R., to Celanese Corporation. Isocyanate-coupled reinforced oxymethylene polymers using improved catalyst system. 4,469,842, Cl. 524-593.000.

Kroll, Robert T., Jr.: *See*—
Mott, Richard C.; Kroll, Robert T., Jr.; and Assal, Tsvi F., 4,470,148, Cl. 375-113.000.

Krueger, Gordon P.: *See*—
Haataja, Bruce A.; Kilpela, Tauno B.; Krueger, Gordon P.; and Adams, Roy D., 4,469,216, Cl. 198-382.000.

Kruger, Hans; and Rubner, Roland, to Siemens Aktiengesellschaft. Liquid-crystal display having orienting polymer with flexible bridges. 4,469,408, Cl. 350-340.000.

Kruger, Tilmann; and Effenberger, Heinz, to Diehl GmbH & Co. Resetting circuit for microprocessors. 4,469,957, Cl. 307-200.00A.

Krupp-Koppers GmbH: *See*—
Jokisch, Friedrich; and Heinrichs, Bernhard, 4,469,559, Cl. 202-270.000.

Krysiak, Dobroslaw J. Machinery for making encrusted food products. 4,469,475, Cl. 425-132.000.

KSM Fastening Systems, Inc.: *See*—
Wilkinson, Harold C.; Mkitarian, Alan W.; Navarra, Vito P.; and Preston, Francis J., 4,469,928, Cl. 219-98.000.

Kubo, Toshihiko: *See*—
Ichidate, Minoru; and Kubo, Toshihiko, 4,469,313, Cl. 266-207.000.

Kubota, Satoshi: *See*—
Kuwabara, Kenichi; Kubota, Satoshi; and Mifune, Hiroyuki, 4,469,783, Cl. 430-567.000.

Kudo, Mituo: *See*—
Itoh, Masaaki; Tanaka, Takeo; Hayashi, Masakatsu; Kudo, Mituo; and Tomita, Akira, 4,469,167, Cl. 165-151.000.

Kudo, Toshio: *See*—
Yamane, Isao; Sato, Takeshi; Kudo, Toshio; Minamoto, Yoshiki; and Tachibana, Takehiko, 4,469,790, Cl. 435-68.000.

Kuga, Ryoichi: *See*—
Hayashi, Masaharu; and Kuga, Ryoichi, 4,469,209, Cl. 192-58.00B.

Kuhr, Manfred: *See*—
Berger, Dieter; Braun, Franz; Frey, Gunter; Knappe, Wolfgang-Reinhold; Kuhr, Manfred; and Werner, Wolfgang, 4,469,789, Cl. 435-23.000.

Kulig, Francis V., to Federal Paper Board Co., Inc. Multi-pocket tray. 4,469,271, Cl. 229-28.00R.

Kummerow, Gerd; Troebel, Werner; Preuss, Bernhard; and Zeuke, Reinhard, to Siemens Aktiengesellschaft. Power drive for electric switchgear in which driving power is elastically transmitted thereto. 4,468,977, Cl. 74-108.000.

Kunetka, Robert E.; and Dowling, Donald J., to Texaco Inc. Method and apparatus for measuring temperature of an earth formation in the presence of a radio frequency electromagnetic field. 4,469,451, Cl. 374-136.000.

Kunitake, Toyoki; and Okahata, Yoshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Molecular aggregate having an ordered structure. 4,469,621, Cl. 252-353.000.

Kuniya, Keiichi: *See*—
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Ohashi, Masabumi, 4,470,063, Cl. 357-67.000.

Kunselman, Garry C.: *See*—
Bernier, John A.; Kunselman, Garry C.; and Kaltenbach, Karl W., 4,469,441, Cl. 356-316.000.

Kunze, Dieter J.: *See*—
Wolber, Jorg; Kunze, Dieter J.; Hahn, Friedrich E.; and Demmer, Walter, 4,470,066, Cl. 358-171.000.

Kurach, Bogdan V.: *See*—
Belik, Vladimir K.; Kurach, Bogdan V.; and Trach, Yaroslav S., 4,469,369, Cl. 296-197.000.

Kurata, Masami; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Color copying machine using signal conversion. 4,469,433, Cl. 355-4.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Hamada, Akira; Funakoshi, Akira; and Ohira, Keiichi, 4,469,978, Cl. 310-366.000.
Sasaki, Tohru; Terasaki, Syuuzi; and Susa, Tomoo, 4,469,747, Cl. 428-325.000.
Satoh, Hiroaki, 4,469,138, Cl. 138-174.000.

Kuroda, Kouki: *See*—
Takayanagi, Yoshiaki; Suzuki, Koji; Nagashima, Nao; Ogawa, Hiroshi; Kuroda, Kouki; and Nagahira, Joyji, 4,470,009, Cl. 324-72.000.

Kuroda, Shigeo; Takahashi, Takahiko; and Anzai, Akio, to Hitachi, Ltd. Method of fabricating semiconductor integrated circuit devices. 4,469,535, Cl. 148-187.000.

Kurosaki, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Bass drum used for training purposes. 4,469,004, Cl. 84-411.00P.

Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Horiuchi, Yasuhiro, to Nippondenso Co., Ltd. Fuel injection apparatus. 4,469,068, Cl. 123-447.000.

Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Kawai, Shizuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Fuel injection device. 4,469,069, Cl. 123-447.000.

Kurtz, Robert J.; and LiCausi, Joseph M., to Bio Research Inc. Surgical drainage device with automatic negative pressure relief system. 4,469,484, Cl. 604-321.000.

Kuttler, Otto; and Mack, Gerhard, to Gebr. Happich GmbH. Support for sun visors. 4,469,367, Cl. 296-97.00K.

Kuwabara, Kenichi; Kubota, Satoshi; and Mifune, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions. 4,469,783, Cl. 430-567.000.

Kuznetsova, Valeria K.: *See*—
Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.; Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I., 4,469,984, Cl. 313-348.000.

Kyburz, Markus: *See*—
Gros, Henry; and Kyburz, Markus, 4,469,599, Cl. 210-610.000.

L. & C. Steinmuller GmbH: *See*—
Michelfelder, Sigfrid; and Voos, Helmut, 4,469,033, Cl. 110-344.000.

La Telemecanique Electrique: *See*—
Petrimaux, Eric; and Prudhomme, Pierre, 4,469,128, Cl. 137-554.000.
Vayre, Roger; and Thomas, Christian, 4,470,028, Cl. 335-16.000.

Labarre, Jean-Francois; Sournies, Francois; van de Grampel, Johan C.; and Van Der Huizen, Adriaan A., to Agence Nationale de Valorisation de la Recherche. Inorganocyclic compounds usable as medicaments and a process for their preparation. 4,469,687, Cl. 424-200.000.

Lagana, Vincenzo; and Cavallanti, Virginio. Process for the isothermal absorption of ethylene oxide using film absorbers. 4,469,492, Cl. 55-49.000.

Laing, David A., to Victor Equipment Company. Motorized hand torch. 4,469,311, Cl. 266-67.000.

Lammel, Gunter: *See*—
Treiber, Helmut; Gotze, Christian; and Lammel, Gunter, 4,469,291, Cl. 242-191.000.

Lanctot, Robert; and Silverwater, Bernard F., to Pall Corporation. Device for determining the concentration of suspended solid contaminants in a fluid. 4,468,954, Cl. 73-61.00R.

Landa, Benzion, to Savin Corporation. Low profile keyboard actuator. 4,469,461, Cl. 400-473.000.

Larsen, Ole F. Apparatus for jumping a moving object from one place to another and a method of using it. 4,469,468, Cl. 405-157.000.

Lathrop, Robert L., to Solid State Timer, Ltd. Hinged cover for two-part container. 4,469,240, Cl. 220-343.000.

Laton, Richard W., to Raytheon Company. Power combiner for coaxial diode oscillators. 4,470,021, Cl. 331-56.000.

Laude, Lucien D., to L'Etat Belge, represente par le Secretaire General des Services de la Programmation de la Politique Scientifique. Method for crystallizing films. 4,469,551, Cl. 156-603.000.

Laurin, Dean G., to Baxter Travenol Laboratories, Inc. Connector member adapted for ultraviolet antimicrobial irradiation. 4,469,835, Cl. 524-349.000.

Lavene, Bernard, to Electronic Concepts, Inc. Dual film metallized capacitor. 4,470,097, Cl. 361-304.000.

Lawhead, David H.: *See*—
Iannacchione, Anthony T.; Lawhead, David H.; and Perry, John H., 4,468,973, Cl. 73-863.010.

Lawrence, Lloyd R.: *See*—
Barnich, Richard G.; Braun, Thomas B.; Lawrence, Lloyd R.; and Schmitt, Peter C., 4,470,042, Cl. 340-721.000.

Lax, Jacob; and Goldner, Sandor Beeper simulator for a telephone answering apparatus. 4,469,915, Cl. 179-2.00A.

Le-Comte Holland B.V.: *See*—
Le Comte, Adolf, 4,469,334, Cl. 277-12.000.

Le Comte, Adolf, to Le-Comte Holland B.V. Sealing system for the air cushion of an air-cushion vessel. 4,469,334, Cl. 277-12.000.

Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, to Societe Vetrotex Saint-Gobain. Method and apparatus for the manufacture of fibers. 4,469,499, Cl. 65-1.000.

Lectret S.A.: *See*—
Murphy, Preston V., 4,469,920, Cl. 179-110.00A.

Ledex, Inc.: *See*—
Myers, John L., 4,470,030, Cl. 335-228.000.

Lee, Richard P. Fishing kite. 4,469,296, Cl. 244-153.00R.

Lee, Ross A., to Du Pont de Nemours, E. I., and Company. Positive-working photosensitive benzoin esters. 4,469,774, Cl. 430-270.000.

Lee, Shy-Fuh: *See*—
Anderson, Richard J.; and Lee, Shy-Fuh, 4,469,872, Cl. 546-302.000.

Leeds & Northrup Company: *See*—
Baxter, Ronald D.; and Freud, Paul J., 4,469,717, Cl. 427-102.000.

Lefevre, Joseph D.: *See*—
Deborski, Gary A.; and Lefevre, Joseph D., 4,469,580, Cl. 204-284.000.

Legille, Edouard: *See*—
Metz, Paul; Legille, Edouard; Schleimer, Francois; and Weiner, Antoine, 4,469,510, Cl. 75-51.000.

Legris: *See*—
Legris, Andre , 4,469,338, Cl. 277-236.000.

Legris, Andre , to Legris. Gasket disposed between an apparatus and a threaded coupling for pipe conveying high pressure fluid. 4,469,338, Cl. 277-236.000.

Lehman, John R.: *See*—
Butler, Ronald G.; and Lehman, John R., 4,469,016, Cl. 92-128.000.

Lehtola, Kalervo: *See*—
Tuovinen, Frans H.; and Lehtola, Kalervo, 4,469,493, Cl. 55-89.000.

Leida Systems Limited: *See*—
Haycock, Ivan J., 4,469,031, Cl. 108-144.000.

Leitner, Wilfried: *See*—
van den Boom, Johannes; Leitner, Wilfried; Salewsky, Gert; and Gassen, Hans-Peter, 4,469,316, Cl. 267-140.100.

Leland Stanford Junior University, Board of Trustees of the: *See*—
Shaw, Herbert J.; Chodorow, Marvin; and Stokes, Loren F., 4,469,397, Cl. 350-96.150.

Lemke, Kuno: *See*—
Vogele, Gunther; and Lemke, Kuno, 4,469,148, Cl. 141-87.000.

Lemoine, Guy; Lucas, Robert; and Vernon, Michel, to Compagnie Francaise de Raffinage. Process for the production of objects made of a rigid expanded material based on polyvinyl chloride, objects obtained by said process, and uses therefor. 4,469,819, Cl. 521-79.000.

Leonhardt, Joachim; Wagener, Bruno; Klein, Hans-Dieter; and Siefer, Wilfried, to Bergwerksverband GmbH. Compression measuring device. 4,468,970, Cl. 73-762.000.

Lepain, Andre; and Charlier, Alain G. R., to Cosden Technology, Inc. Surface-active compositions and method for dispersing oil slicks. 4,469,603, Cl. 210-749.000.

Leroy, Daniel; and Gazagne, Laurent, to Compagnie de Construction Mechanique Sulzer. Axially slidable vane motor with valves in fluid-based vanes. 4,469,474, Cl. 418-217.000.

Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. 5-(4-Thiazolyl)-6-alkyl-2(1H)-pyridinones and their cardiotonic use. 4,469,699, Cl. 424-263.000.

Leston, Gerd, to Koppers Company, Inc. Complex formed for separating chlorinated phenols. 4,469,900, Cl. 568-774.000.

Leston, Gerd, to Koppers Company, Inc. Complex formed for separating isopropylated m-cresols. 4,469,901, Cl. 568-781.000.

L'Etat Belge, represente par le Secretaire General des Services de la Programmation de la Politique Scientifique: *See*—
Laude, Lucien D., 4,469,551, Cl. 156-603.000.

Leuenberger, Claude-Eric, to Asulab S.A. Integrated circuit for a controllable frequency oscillator. 4,470,024, Cl. 331-108.00D.

Lever Brothers Company: *See*—
Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., 4,469,848, Cl. 252-106.000.

LeVine, Donald J.; and Salvador, Victor L., to Kings Electronics Co., Inc. Crimped connector. 4,469,390, Cl. 339-95.00R.

Levine, Michael R. Electronic thermostat with repetitive operation cycle. 4,469,274, Cl. 236-46.00R.

Levitt, Malcolm H.; and Frenkiel, Thomas A., to National Research Development Corporation. NMR Spectroscopy. 4,470,014, Cl. 324-311.000.

Lewis, Henry G., Jr.; and Bolger, Thomas V., to RCA Corporation. Reduced data rate digital comb filter. 4,470,069, Cl. 358-31.000.

Lewis, Robert T.; and Finn, Everett N., to Brown & Williamson Tobacco Corporation. Apparatus for depositing coupons on cartons. 4,468,912, Cl. 53-137.000.

Leybold-Heraeus GmbH: *See*—
Schwiecker, Horst; and Zoller, Alfons, 4,469,713, Cl. 427-10.000.

Liau, Zong-Long; and Walpole, James N., to Massachusetts Institute of Technology. GaInAsP/InP Double-heterostructure lasers. 4,468,850, Cl. 29-569.00L.

Libman Broom Company: *See*—
Batchelor, Douglas R., 4,468,830, Cl. 15-119.00A.
Batchelor, Douglas R., 4,468,832, Cl. 15-244.00R.

Libman, Iosif S.: *See*—
Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.; Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I., 4,469,984, Cl. 313-348.000.

LiCausi, Joseph M.: *See*—
Kurtz, Robert J.; and LiCausi, Joseph M., 4,469,484, Cl. 604-321.000.

Lichtenstein, Joseph: *See*—
Sharpless, Edward N.; and Lichtenstein, Joseph, 4,469,452, Cl. 374-160.000.

Lieptz, Nathan S., to Congoleum Corporation. Key cutting device. 4,468,994, Cl. 83-414.000.

Ligon, Robert C., to Union Carbide Corporation. Condensation of ring-substituted phenylacetonitriles with mono-esters of dicarboxylic acids. 4,469,642, Cl. 260-465.00D.

Lindberg, Terrance D.: *See*—
Doering, Arlin B.; and Lindberg, Terrance D., 4,470,083, Cl. 360-97.000.

Lindberg, Ulf H. A.; and Ogren, Sven-Ove, to Astra Lakemadel Aktiebolag. Method for treatment of senile dementia. 4,469,707, Cl. 424-330.000.

Linde Aktiengesellschaft: *See*—
Frydman, Allen; and Reimann, Hans, 4,469,600, Cl. 210-610.000.

Linder, Ernst; Linn, Karl-Otto; Moser, Winfried; Muller, Klaus; and Zabler, Erich, to Robert Bosch GmbH. Apparatus for detecting operating data of an internal combustion engine. 4,468,949, Cl. 73-35.000.

Linder, Ernst, to Robert Bosch GmbH. Ignition arrangement for internal combustion engine. 4,469,058, Cl. 123-145.00A.

Linhardt & Associates, Inc.: *See*—
Linhardt, Hans D., 4,469,497, Cl. 55-282.000.

Linhardt, Hans D., to Linhardt & Associates, Inc. Axisymmetrical separator for separating particulate matter from a fluid carrying medium. 4,469,497, Cl. 55-282.000.

Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., to Eaton Corporation. Molded case circuit breaker with improved high fault current interruption capability. 4,470,027, Cl. 335-16.000.

Linn, Karl-Otto: *See*—
Linder, Ernst; Linn, Karl-Otto; Moser, Winfried; Muller, Klaus; and Zabler, Erich, 4,468,949, Cl. 73-35.000.

Linne, Terry D., to Caterpillar Tractor Co. Track pin seal. 4,469,336, Cl. 277-92.000.

Linsenmeyer, Arthur F.: *See*—
Blumer, John E.; and Linsenmeyer, Arthur F., 4,469,210, Cl. 193-22.000.

Linvar Limited: *See*—
Hopwell, Ernest E., 4,469,030, Cl. 108-28.000.

Lion Corporation: *See*—
Iioka, Isao; Yamagishi, Keiiti; Sato, Hiroshi; and Suganuma, Nobuo, 4,469,673, Cl. 424-50.000.

Lissenburg, Rokus C. D.; and Kamstra, Paulus R., to Duphar International Research B.V. Disposable hypodermic syringe. 4,469,482, Cl. 604-187.000.

Litovitz, Theodore A.: *See*—
Simmons, Catherine J.; Simmons, Joseph H.; Macedo, Pedro B.; and Litovitz, Theodore A., 4,469,628, Cl. 252-629.000.

Litton Resources Systems, Inc.: *See*—
McNeel, William O., 4,470,134, Cl. 367-188.000.

Litton Systems, Inc.: *See*—
Anderson, Robert H., 4,470,045, Cl. 340-783.000.

Liu, Ping Y.; and Ko, Allen W., to General Electric Company. Nucleating agents for polycarbonate resins prepared via transesterification of bisphenol-A and diphenyl carbonate. 4,469,838, Cl. 524-394.000.

Ljukshin, Egor N.: *See*—
Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.;

Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I., 4,469,984, Cl. 313-348.000.
Loew, Theodore, to Standard Products Company, The. Automotive trim strip with expanded pressure sensitive tape. 4,469,727, Cl. 428-31.000.
Loffler, Alfons, to Zahnradfabrik Friedrichshafen, AG. Pressure control device for the actuation of a clutch or brake. 4,469,011, Cl. 91-433.000.
Loffler, Gerhard; and Arendt, Franz, to Heidelberger Druckmaschinen. Device for film-mounting print control strips at a precise level and in registry. 4,469,025, Cl. 101-171.000.
Loginov, Lev V.: *See*—
Perevodchikov, Vladimir I.; Akimov, Pavel I.; Skibityansky, David A.; Shapenko, Valentina N.; Loginov, Lev V.; Shapiro, Alexandr L.; Yakovlev, Arkady N.; and Kosmachevsky, Vitaly M., 4,469,982, Cl. 313-293.000.
Lohausen, Viktor. Awning. 4,469,159, Cl. 160-22.000.
Lombardi, Steven A., to Allen-Bradley Company. Programmable motor protector. 4,470,092, Cl. 361-23.000.
Long, Daniel C. Rollable stool. 4,469,372, Cl. 297-5.000.
Lopacki, John B.; and Emes, Harry R., to Kennecott Corporation. Electrical resistor structure. 4,470,034, Cl. 338-332.000.
Lordi, Frank E., to Atlantic Richfield Company. Molding composition comprising modified styrene-maleic anhydride copolymer and polycarbonate. 4,469,843, Cl. 525-67.000.
Lorenz, Rainer, to Palitex Project-Company GmbH. Pneumatically threadable yarn brake and a two-for-one twisting spindle equipped therewith. 4,468,920, Cl. 57-279.000.
Losert, Gerhard K., to General Electric Company. Refrigerator cabinet and method of construction. 4,469,383, Cl. 312-296.000.
Lovejoy, Beverly I.: *See*—
Harris, Frank E., deceased; and Lovejoy, Beverly I., administratix, 4,468,888, Cl. 49-396.000.
Lovejoy, Beverly I., administratix: *See*—
Harris, Frank E., deceased; and Lovejoy, Beverly I., administratix, 4,468,888, Cl. 49-396.000.
Lovelady, Kenneth T., to Recognition Equipment Incorporated. A-C Coupled, modulator based, phase-error sensing for IJP. 4,470,052, Cl. 346-75.000.
Loveless, Frederick C., to Uniroyal, Inc. Method for the oligomerization of alpha-olefins. 4,469,910, Cl. 585-511.000.
Low, Martin, to SIG Schweizerische Industrie-Gesellschaft. Heating apparatus for thermally bonding plastic foils and method for the operation thereof. 4,469,545, Cl. 156-359.000.
Low, Virgil T. Dual load trailer. 4,469,346, Cl. 280-414.100.
LTV Aerospace and Defense Co., The: *See*—
Billingsley, James D.; and Cottingham, Donald T., 4,470,151, Cl. 382-44.000.
Lucas Industries plc: *See*—
Brown, Robert H., 4,470,002, Cl. 320-1.000.
Lucas Industries Public Limited Company: *See*—
Farr, Glyn P. R., 4,468,927, Cl. 60-554.000.
Nicholls, Lawrence G.; and Powell, George B., 4,469,315, Cl. 267-64.170.
Lucas, Robert: *See*—
Lemoine, Guy; Lucas, Robert; and Vernon, Michel, 4,469,819, Cl. 521-79.000.
Lucien, Jacques P., to Shell Oil Company. Process for the preparation of a C_2–C_4 paraffin dehydrogenation catalyst. 4,469,811, Cl. 502-227.000.
Luke, Kevin; and Allgood, Robert N., to Motorola, Inc. Input buffer. 4,469,959, Cl. 307-264.000.
Lukens, James E.; Jain, Aloke K.; and Mankiewich, Paul M., to United States of America, Navy. Coherent array of Josephson oscillators with external bias leads. 4,470,023, Cl. 331-107.00S.
Lundberg, Richard E.; and Murphy, Bartholomew D., to General Electric Company. Reference signal circuit. 4,469,994, Cl. 318-591.000.
Luning, Stephen G.: *See*—
Disbrow, John R.; Eiselen, Everett T.; Findley, Gerald L.; Luning, Stephen G.; and Wang, David T., 4,470,129, Cl. 364-900.000.
Lupo, Giorgio: *See*—
Castelli, Pier Guido; Lupo, Giorgio; and Barla, Diego, 4,468,984, Cl. 74-796.000.
Lusch, Peter, to Ferdinand Lusch GmbH & Co. KG. Display stand. 4,469,232, Cl. 211-189.000.
Lutz, James P.: *See*—
Stolz, Theodore O.; Moore, Richard A.; and Lutz, James P., 4,469,822, Cl. 521-167.000.
Lynch, John; Vyvial, Rudolf; Zuerger, Manfred; and Borho, Klaus, to BASF Aktiengesellschaft. Multi-layer element with polyvinyl alcohol overcoat suitable for the production of relief printing plates. 4,469,775, Cl. 430-273.000.
Lyons, James E.: *See*—
Hsu, Chao-Yang; and Lyons, James E., 4,469,883, Cl. 560-131.000.
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG: *See*—
Hagin, Faust; and Drewitz, Hans J., 4,469,187, Cl. 180-14.200.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Geschwindner, Herbert, 4,469,321. Cl. 271-183.000.
Maag Gear-Wheel & Machine Co. Ltd.: *See*—
Schaarschmidt, Joachim; and Deibel, Erwin, 4,469,362, Cl. 294-116.000.
Wyss, Urs; and Federer, Johannes, 4,469,530, Cl. 148-16.500.
Macedo, Pedro B.: *See*—
Simmons, Catherine J.; Simmons, Joseph H.; Macedo, Pedro B.; and Litovitz, Theodore A., 4,469,628, Cl. 252-629.000.
Machholz, Walter, to Metzeler Schaum GmbH. Planar element for the absorption of air-transmitted sound and method of manufacturing the same. 4,469,736, Cl. 428-159.000.
Machiele, Delwyn E.: *See*—
Adin, Anthony; Kovacs, Csaba A.; and Machiele, Delwyn E., 4,469,773, Cl. 430-222.000.
Machinefabriek G.J. Nijhuis B.V.: *See*—
Nijhuis, Johan W., 4,468,837, Cl. 17-1.00E.
Mack, Gerhard: *See*—
Kuttler, Otto; and Mack, Gerhard, 4,469,367, Cl. 296-97.00K.
Macken, John A. Laser assisted saw device. 4,469,931, Cl. 219-121.0LG.
Madan, Arun, to Energy Conversion Devices, Inc. P-type semiconductor material having a wide band gap. 4,469,715, Cl. 427-74.000.
Madson, Michael A.: *See*—
Mawhinney, Thomas P.; and Madson, Michael A., 4,469,794, Cl. 436-127.000.
Maeda Industries, Ltd.: *See*—
Ozaki, Nobuo, 4,469,479, Cl. 474-80.000.
Maeda, Kazuo: *See*—
Nakamura, Takayoshi; Maeda, Kazuo; Ohno, Masayuki; and Akiyama, Teruo, 4,469,308, Cl. 254-350.000.
Maeda, Kenji: *See*—
Ishihara, Toshikazu; Kitano, Tomoyuki; Maeda, Kenji; and Shinzato, Toru, 4,469,593, Cl. 210-96.200.
Maeda, Masaya, to Canon Kabushiki Kaisha. Record reproduction apparatus. 4,470,086, Cl. 360-85.000.
Maehara, Shigeto, to Mitsubishi Denki Kabushiki Kaisha. Movable substation. 4,469,954, Cl. 290-1.00A.
Maehata, Hidehiko: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Maender, Otto W., to Monsanto Company. Fragrant prevulcanization inhibitors. 4,469,874, Cl. 548-475.000.
Maffitt, Kent N.; Robbins, William B.; and Willson, Richard F., to Minnesota Mining and Manufacturing Company. Protuberant optical recording medium. 4,470,053, Cl. 346-135.100.
Magariyama, Kenichi: *See*—
Kimura, Makoto; Tomino, Naoki; Magariyama, Kenichi; and Shiokama, Yoshiharu, 4,469,422, Cl. 354-286.000.
Magenheim, Bertram; and Rocks, James K., to Miami R & D Limited Partnership. Microwave ice accretion meter. 4,470,123, Cl. 364-563.000.
Maher, Raymond J. Outrigger fishing rod holder. 4,468,878, Cl. 43-21.200.
Mai, Udo: *See*—
Favreau, Jean-Claude; Hartmann, Uwe; and Mai, Udo, 4,469,992, Cl. 315-371.000.
Makita, Masaru, to Canon Kabushiki Kaisha. Electronic equipment. 4,469,455, Cl. 400-171.000.
Malaval, Claude, to Novatome. Emergency shut-off device, in case of leakage of a steam generator tube. 4,469,051, Cl. 122-507.000.
Malinoff, Donald, to Culture Tek Corporation. Pipette sampler and related apparatus. 4,468,974, Cl. 73-863.320.
Mallinckrodt Inc.: *See*—
Woods, James W.; St. Denis, John N.; and Chapman, Dana A., 4,469,787, Cl. 435-7.000.
Malpas, Jon H.; and Calder, Alan R., to Diemoulders Proprietary Limited. Apparatus for dispensing liquids. 4,469,249, Cl. 222-83.000.
Manaka, Toshio; and Atago, Takeshi, to Hitachi, Ltd. Apparatus for controlling internal combustion engine. 4,469,064, Cl. 123-339.000.
Manber, Solomon: *See*—
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,469,995, Cl. 318-685.000.
Mandish, Theodore O. Hydroponic system with floating plant trays and precast concrete sidewalls. 4,468,885, Cl. 47-59.000.
Mandl, Gerhard: *See*—
Maurer, Andreas; Mandl, Gerhard; and Meile, Hanspeter, 4,469,214, Cl. 198-339.000.
Manera, Maxime: *See*—
Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, 4,469,499, Cl. 65-1.000.
Mangold, Hans, to Grundig E. M. V. Tape cassette. 4,469,292, Cl. 242-199.000.
Mankiewich, Paul M.: *See*—
Lukens, James E.; Jain, Aloke K.; and Mankiewich, Paul M., 4,470,023, Cl. 331-107.00S.
Mannhart, Alto: *See*—
Jungwirth, Dieter; Schnitzler, Lorenz; Mannhart, Alto; and Wlodkowski, Johann, 4,469,756, Cl. 428-592.000.
Manning, Harold E., to Petro Tex Chemical Corporation. Isobutene removal from C_4 streams. 4,469,911, Cl. 585-515.000.
Manquen, Charles D. Tape handling device. 4,469,265, Cl. 226-97.000.
Manville Service Corporation: *See*—
Graser, Earl J., 4,469,222, Cl. 206-180.000.
Marchesi, Franco, to Rockwell-Rimoldi S.p.A. Work feed device in sewing machines. 4,469,039, Cl. 112-323.000.
Marcum, Al. Heat recovery apparatus. 4,469,276, Cl. 237-51.000.
Marcus, Konrad H.; and Cody, Michael J., to Prince Corporation. Automotive sunglass storage system. 4,469,365, Cl. 296-37.700.
Marion Laboratories: *See*—
Jones, Donald W.; and Gabor, Michael J., 4,469,660, Cl. 422-70.000.
Marjoram, John R.: *See*—
Higginbotham, Gordon J. S.; Marjoram, John R.; and Horrocks, Frederick J., 4,469,161, Cl. 164-122.200.

Mark, Victor, to General Electric Company. Flame retardant polycarbonate compositions. 4,469,833, Cl. 524-161.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Polycarbonate composition from branchad chain dihydric phenol. 4,469,861, Cl. 528-196.000.

Marsault, Jean-Jacques; Semedard, Jean-Claude; and Peyrelongue, Jean-Pierre, to Sieln Industrie; and Electricite de France. Storage vessel support device. 4,469,236, Cl. 220-1.500.

Marshall, Walter D.; and Garrison, James W., Jr. Scalp stimulating system. 4,469,092, Cl. 128-36.000.

Martens, Jurgen: *See*—
Busker, Eberhard; Martens, Jurgen; Steigerwald, Regina; and Weigel, Horst, 4,469,875, Cl. 548-532.000.
Drauz, Karlheinz; Kleemann, Axel; Martens, Jurgen; Scherberich, Paul; and Effenberger, Franz, 4,469,876, Cl. 548-535.000.

Martin, Charles L., to Raychem Corporation. Composite coupling. 4,469,357, Cl. 285-381.000.

Martin, Gerard M.: *See*—
Berth, Michel; Venger, Camille; and Martin, Gerard M., 4,469,528, Cl. 148-1.500.

Martin, Howard. Chemical diinfectant and sterilant composition comprising acidic glutaraldehyde. 4,469,614, Cl. 252-106.000.

Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., to Hoechst-Roussel Pharmaceuticals, Incorporated. 2-(2-Nitrophenyl)-1-phenylethanone oxime acetates. 4,469,889, Cl. 564-254.000.

Martin, Pierre: *See*—
Steiner, Eginhard; and Martin, Pierre, 4,469,896, Cl. 568-495.000.

Martin, Richard T., to Applied Magnetics-Magnetic Head Divison Corporation. Method for controlling the edge gradient of a layer of deposition material. 4,469,719, Cl. 427-255.500.

Maruhashi, Motokazu; and Nakagawa, Sumio, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for preparing an aqueous emulsion of a polymer by emulsion polymerization in the presence of an emulsifier. 4,469,839, Cl. 524-458.000.

Marusak, Stephen A. Fish hook holder. 4,468,882, Cl. 43-57.100.

Maruyama, Tetsuo: *See*—
Chou, Der-Jeou; and Maruyama, Tetsuo, 4,468,854, Cl. 29-573.000.

Maruyama, Yuji; and Horinishi, Katsumi, to West Electric Co., Ltd. Electronic flash device. 4,469,990, Cl. 315-241.00P.

Marven, Al: *See*—
Hill, James J.; and Marven, Al, 4,469,255, Cl. 222-649.000.

Masco Corporation: *See*—
Stapleton, Craig A.; Rasor, William; and Cronce, Gary, 4,469,261, Cl. 224-321.000.

Mashimo, Katsuyuki; Masuda, Teruo; Nakayama, Toshio; Hashimoto, Masuyuki; and Kanai, Takeshi, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Absorption refrigeration system. 4,468,934, Cl. 62-495.000.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,469,555, Cl. 162-162.000.

Masonite Corporation: *See*—
Eaton, James W.; and Narhi, Erland D., 4,468,903, Cl. 52-105.000.
Eaton, James W., 4,468,909, Cl. 52-541.000.

Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees. Mechanoacoustic transducer for use in transmitting high acoustic power densities into geological formations such as oil-saturated sandstone or shale. 4,469,175, Cl. 166-249.000.

Massachusettts General Hospital: *See*—
Nathanson, James A., 4,469,706, Cl. 424-330.000.

Massachusetts Institute of Technology: *See*—
Liau, Zong-Long; and Walpole, James N., 4,468,850, Cl. 29-569.00L.

Massey, Lester G.; Brabets, Robert I.; George, David A.; and Abel, William A., to CNG Research Company. Method for heating agglomerating slurries. 4,469,280, Cl. 241-1.000.

Masuda, Teruo: *See*—
Mashimo, Katsuyuki; Masuda, Teruo; Nakayama, Toshio; Hashimoto, Masuyuki; and Kanai, Takeshi, 4,468,934, Cl. 62-495.000.

Masuda, Yutaka, to Yamaha Motor Co., Ltd. Electric type tachometer for vehicles. 4,470,011, Cl. 324-166.000.

Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, to Canon Kabushiki Kaisha. Range finding device. 4,469,417, Cl. 354-404.000.

Mate, Jean-Luc, to Renix Electronique S.A. Ignition coil control device for regulating the optimal conduction time for an internal combustion engine. 4,469,081, Cl. 123-609.000.

Matney, Arthur. Blister pack panel for face powder compact display. 4,469,226, Cl. 206-470.000.

Matsuga, Yoshiaki: *See*—
Watanabe, Shigetaka; Suzuki, Masahiro; and Matsuga, Yoshiaki, 4,469,729, Cl. 428-36.000.

Matsui, Fumio; Sashida, Mitsuaki; Komaki, Toshihiro; and Yoshizawa, Atsushi, to Pioneer Electronic Corporation. Method and system for developing a photo-resist material used as a recording medium. 4,469,424, Cl. 354-298.000.

Matsumoto, Akio: *See*—
Iwaki, Yoshiyuki; and Matsumoto, Akio, 4,469,966, Cl. 310-62.000.

Matsumoto, Hiroshi; and Kita, Nobuyuki, to Fuji Photo Film Co., Ltd. Developing solution for light-sensitive printing plates. 4,469,776, Cl. 430-309.000.

Matsumoto, Kent E.: *See*—
DeBaun, Jack R.; Pallos, Ferenc M.; Matsumoto, Kent E.; and Ross, John H., 4,469,701, Cl. 424-267.000.

Matsumoto, Makoto, to General Electric Company. Process for treating fillers with fluoroalicone compounds. 4,469,522, Cl. 106-308.00M.

Matsumoto, Shinzo; and Hiroshima, Minoru, to Hitachi, Ltd. Magnetic bubble memory device. 4,470,132, Cl. 365-43.000.

Matsumoto, Yukio: *See*—
Fujiki, Kuniharu; Matsumoto, Yukio; and Yoshida, Hiroshi, 4,469,750, Cl. 428-447.000.

Matsuoka, Fumio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,469,351, Cl. 280-806.000.

Matsushita Electric Industrial Co.: *See*—
Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, 4,470,072, Cl. 358-260.000.

Matsushita Electric Industrial Company, Limited: *See*—
Nishino, Atsushi; Kimura, Kunio; Ikeda, Masaki; and Oyabu, Hajime, 4,469,798, Cl. 501-14.000.
Sano, Reiji; Morita, Yasuyuki; Kawauchi, Yoshikazu; Kimura, Minoru; and Takahashi, Hidemi, 4,470,144, Cl. 372-61.000.
Sawairi, Hitoshi, 4,470,099, Cl. 361-328.000.

Matsushita Electric Works, Ltd.: *See*—
Ishiki, Saburo; and Abura, Yoshinori, 4,469,934, Cl. 219-222.000.

Matsushita Graphic Communications Systems, Inc.: *See*—
Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, 4,470,072, Cl. 358-260.000.

Matsuura, Masaaki: *See*—
Ajiki, Yoshio; Honda, Shoichi; and Matsuura, Masaaki, 4,469,061, Cl. 123-198.00F.

Matsuyama, Shigeru: *See*—
Takashima, Masaru; Matsuyama, Shigeru; Hayashi, Yoshihiro; Ito, Hisaji; Fujita, Kotaro; Inai, Kenji; and Takemoto, Shoji, 4,469,309, Cl. 266-44.000.

Maurer, Andreas; Mandl, Gerhard; and Meile, Hanspeter, to Rieter Machine Works Limited. Apparatus for moving spinning cans. 4,469,214, Cl. 198-339.000.

Mauries, Reinhard: *See*—
Rohner, Joachim; Zumfeld, Heinz; and´ Mauries, Reinhard, 4,468,918, Cl. 57-22.000.

Maury, Jean-Pierre, to Nodet-Gougis. Suction-type distributor for a single-seed seeder. 4,469,244, Cl. 221-200.000.

Mawhinney, Thomas P.; and Madson, Michael A., to University of Missouri, The Curators of the. Silylation of inorganic oxy-anions. 4,469,794, Cl. 436-127.000.

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See*—
Frischmuth, Hans; Perchermeier, Jurgen; Stimmelmayr, Anton; and Weichselgartner, Heinrich, 4,469,496, Cl. 55-197.000.

Maxcraft: *See*—
Ware, Maximilian, 4,469,325, Cl. 272-72.000.

May, Geoffrey J.: *See*—
Fletcher, Norman W.; and May, Geoffrey J., 4,469,145, Cl. 141-1.100.

Maynard, James L.: *See*—
Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., 4,469,075, Cl. 123-523.000.

Mazeau, Jean P.: *See*—
Boudot, Jean E.; and Mazeau, Jean P., 4,469,800, Cl. 501-43.000.

McAllister, Gary L., to Jersey Nuclear-Avco Isotopes, Inc. Method and apparatus for improving flashlamp performance. 4,469,991, Cl. 315-246.000.

McBrian, John E., to American Standard Inc. Premise alarm shunt arrangement. 4,470,039, Cl. 340-514.000.

McBride, Thomas D. Non-slip resilient ladder support. 4,469,194, Cl. 182-107.000.

MCC Associates: *See*—
Chiang, David; Chu, Mosi; and Manber, Solomon, 4,469,995, Cl. 318-685.000.

McCarthy, Donald F.: *See*—
Van Pelt, Richard W.; and McCarthy, Donald F., 4,470,082, Cl. 360-51.000.

McCartney, William J.; Jacobs, Jerome D.; and Keil, Mitchel J., to Motorola, Inc. Shock absorbing battery housing. 4,469,765, Cl. 429-123.000.

McCown, Jack R.; and Firth, J. Rogers, to International Paper Company. Small log bucking system. 4,468,993, Cl. 83-112.000.

McCrady, Paul E.; and Reif, Robert B., to Battelle Development Corporation. Apparatus for spinning textile fibers. 4,468,922, Cl. 57-402.000.

McEwen, James A., to Western Clinical Engineering Ltd. Pneumatic torniquet. 4,469,099, Cl. 128-327.000.

McEwen, Jerry J. Cover apparatus with detachable compartments. 4,469,256, Cl. 224-32.00R.

McFadden, Michael B.; and Honeysett, Randal M., to W. J. Bradford Paper Company. Foldable container. 4,469,272, Cl. 229-28.00R.

McGeehee, Ronald W. Automatic sawing system. 4,468,992, Cl. 83-56.000.

McGilly, James: *See*—
Torday, John; and McGilly, James, 4,469,567, Cl. 204-27.000.

McGraw-Edison Company: *See*—
Merrill, Peter K., 4,469,123, Cl. 137-315.000.

McGuffie, Michael J., to Torrington Company, The. Thrust and radial ball bearing. 4,469,381, Cl. 308-174.000.

McHugh, Robert G., to AMP Incorporated. Printed circuit board connector. 4,469,387, Cl. 339-42.000.

McKay, Stewart K. Spa. 4,468,822, Cl. 4-488.000.

McKeen, Jeffrey A.: *See*—
Bronsky, Robert J.; Clark, Dennis B.; and McKeen, Jeffrey A., 4,469,124, Cl. 137-464.000.

McKenzie, Lee F., to Hughes Tool Company. Fluid loss additive. 4,469,518, Cl. 106-90.000.

McMillan, Stephen L., to General Electric Company. Tubless washing machine. 4,468,938, Cl. 68-23.300.

McNally, Guy W. W., to British Broadcasting Corporation. Real-time data sampling with memory sharing by high speed I/O processor and cycle stealing support processor. 4,470,109, Cl. 364-200.000.

McNeel, William O., to Litton Resources Systems, Inc. Marsh case for a geophone. 4,470,134, Cl. 367-188.000.

McNeilab, Inc.: *See—*
Stanley, Kerry G.; and Ho, Winston, 4,469,705, Cl. 424-312.000.

McQuay Inc.: *See—*
Redington, Gordon F., 4,469,132, Cl. 137-601.000.

Meador, Neil A., to Permanent Label Corporation. Apparatus and method for decorating articles of non-circular cross-section. 4,469,022, Cl. 101-38.00R.

Meek, Robert K., to Prince Valve, Inc. Modular check valve. 4,469,122, Cl. 137-312.000.

Mehl, Donald N., to Creative Research and Manufacturing Inc. Bone marrow aspiration needle. 4,469,109, Cl. 128-753.000.

Meiji Seika Kaisha Ltd.: *See—*
Tsuruoka, Takashi; Imai, Satoshi; Satoh, Atsuyuki; Watanabe, Tetsuro; Watanabe, Koji; Inouye, Shigeharu; and Niida, Taro, 4,469,643, Cl. 260-502.50G.

Meile, Hanspeter: *See—*
Maurer, Andreas; Mandl, Gerhard; and Meile, Hanspeter, 4,469,214, Cl. 198-339.000.

Mein, Peter G., to Carus Corporation. Process for recovering cesium from cesium alum. 4,469,670, Cl. 423-599.000.

Meinan Machinery Works, Inc.: *See—*
Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, 4,469,154, Cl. 144-2.00R.

Mellgren, Per-Gustaf, to Forest Engineering Research Institute of Canada. Bush cleaning apparatus. 4,468,917, Cl. 56-15.200.

Melocik, Kurt B., to Caterpillar Tractor Co. Single lever control with automatic valve latching. 4,469,007, Cl. 91-358.00A.

Mendel, Kilian K.: *See—*
Cisar, James R.; and Mendel, Kilian K., 4,469,652, Cl. 264-40.700.

Merck & Co., Inc.: *See—*
Mrozik, Helmut H., 4,469,682, Cl. 424-180.000.

Merck Patent GmbH: *See—*
Hasegawa, Shinji; Toriyama, Kazuhisa; Pohl, Ludwig; and Weber, Georg, 4,469,618, Cl. 252-299.500.

Merlo, Angelo L. Method and apparatus for utilizing microwaves for internal combustion engine diagnostics. 4,468,956, Cl. 73-117.300.

Merrel, Richard C., to Munoz, Joseph V.; and Zavala, Anthony J., part interest to each. Universal pneumatic grinding bar. 4,468,897, Cl. 51-259.000.

Merrill, Peter K., to McGraw-Edison Company. Cold box valve. 4,469,123, Cl. 137-315.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Fischer, Karl-Heinz; Schnabel, Wolfram; and Serbent, Harry, 4,469,509, Cl. 75-36.000.

Metz, Paul; Legille, Edouard; Schleimer, Francois; and Weiner, Antoine, to Arbed S.A. Method of and apparatus for the direct production of molten iron. 4,469,510, Cl. 75-51.000.

Metzeler Schaum GmbH: *See—*
Machholz, Walter, 4,469,736, Cl. 428-159.000.

Meyer, Gunter; and Pennekamp, Ingbert, to Robert Bosch GmbH. Apparatus for transport of capsules and the like. 4,469,217, Cl. 198-425.000.

Meyer, Willy: *See—*
Jorzyk, Sigurd; Meyer, Willy; and Splicthoff, Heinz, 4,468,923, Cl. 60-39.020.

Meyering, Clinton: *See—*
Staver, Peter J., 4,469,105, Cl. 128-643.000.

Meyn Machinenfabriek, B.V.: *See—*
Sjostrom, Stig; and Thornqvist, Allan, 4,468,838, Cl. 17-11.000.

Miami R & D Limited Partnership: *See—*
Magenheim, Bertram; and Rocks, James K., 4,470,123, Cl. 364-563.000.

Micafil AG: *See—*
Gmeiner, Paul; and Oesch, Gustav, 4,469,444, Cl. 366-144.000.

Michael, J. Gabriel; and Pesce, Amadeo J. Polypeptide active immunosuppressant fraction. 4,469,677, Cl. 424-91.000.

Michelfelder, Sigfrid; and Voos, Helmut, to L. & C. Steinmuller GmbH. Method of minimizing the emission of contaminants from combustion plants. 4,469,033, Cl. 110-344.000.

Michener, James A., to Grass Valley Group, Inc., The. Horizontal sync to subcarrier phase measurement method and apparatus. 4,470,064, Cl. 358-10.000.

Michigan Consolidated Gas Company: *See—*
Bronsky, Robert J.; Clark, Dennis B.; and McKeen, Jeffrey A., 4,469,124, Cl. 137-464.000.

Michigan Technological University, Board of Control of: *See—*
Haataja, Bruce A.; Kilpela, Tauno B.; Krueger, Gordon P.; and Adams, Roy D., 4,469,216, Cl. 198-382.000.

Micro Denshi Co., Ltd.: *See—*
Hayashi, Keizo; Sumida, Atsushi; Murayama, Teruo; and Minobe, Tomio, 4,469,817, Cl. 521-45.000.

Miedaner, Horst; and Spirk, Herbert. Blocks or bricks for the construction of a two-shell tile stove. 4,468,906, Cl. 52-279.000.

Mifune, Hiroyuki: *See—*
Heki, Tatsuo; and Mifune, Hiroyuki, 4,469,784, Cl. 430-567.000.
Kuwabara, Kenichi; Kubota, Satoshi; and Mifune, Hiroyuki, 4,469,783, Cl. 430-567.000.

Miki, Nobuaki; and Yokoyama, Shoji, to Aisin Warner Kabushiki Kaisha. Control system for a continuously variable transmission for vehicles. 4,470,117, Cl. 364-424.100.

Mikite, Gyula: *See—*
Kis-Tamas, Attila; Mikite, Gyula; Csutak nee Jakucs, Erzsebet; and Kocsis, Laszlo , 4,469,703, Cl. 424-311.000.

Mikuni, Hajime: *See—*
Hasebe, Koshi; Totani, Shinzo; Muramoto, Kazuo; Mikuni, Hajime; Akutsu, Kazushi; and Minami, Kazuaki, 4,470,119, Cl. 364-449.000.

Milberger, Walter E.; and Payer, Stephen F., to United States of America, Air Force. Fast switching driver for inductive load, such as a phase shifter. 4,469,961, Cl. 307-270.000.

Miles Laboratories, Inc.: *See—*
Albarella, James P., 4,469,797, Cl. 436-536.000.

Millard, Barry J., to Adwest Engineering Limited. Rotary valve for a power assisted steering mechanism. 4,469,342, Cl. 280-148.000.

Millauer, Hans; Schwertfeger, Werner; and Siegemund, Gunter, to Hoechst Aktiengesellschaft. Omega-fluorosulfato-perfluoro-(2-methyl-alkan-3-ones). 4,469,641, Cl. 260-458.00F.

Miller, Albert A., to AB Volvo. Control system for multi-ratio gearing. 4,468,987, Cl. 74-862.000.

Miller, Arthur, to RCA Corporation. Method of cleaving a crystal to produce a high optical quality corner. 4,469,500, Cl. 65-112.000.

Miller, Gary E. Apparatus and method for injecting eggs. 4,469,047, Cl. 119-1.000.

Miller, Grady P. Skylight. 4,468,899, Cl. 52-58.000.

Miller, Kenneth F.: *See—*
Belfoure, Edward L.; and Miller, Kenneth F., 4,469,850, Cl. 525-439.000.

Miller, Michael J.: *See—*
Chupp, John P.; Neumann, Thomas E.; and Miller, Michael J., 4,469,890, Cl. 564-417.000.

Miller, Paul S.: *See—*
Ts'o, Paul O. P.; and Miller, Paul S., 4,469,863, Cl. 536-27.000.

Miller, Richard L.: *See—*
Doerr, John F.; and Miller, Richard L., 4,470,036, Cl. 340-66.000.

Miller, Wendell E.: *See—*
Ellingson, Gary L.; and Miller, Wendell E., 4,470,050, Cl. 343-766.000.

Milliken Research Corporation: *See—*
Otto, Wolfgang K. F., 4,468,844, Cl. 26-28.000.

Milson, Ilia: *See—*
Kofke, William A., Jr.; and Milson, Ilia, 4,469,805, Cl. 502-33.000.

Mimura, Yoshiki, to Ushio Denki Kabushiki Kaisha. Method for heating semiconductor wafer by means of application of radiated light with supplemental circumferential heating. 4,469,529, Cl. 148-1.500.

Minagawa, Motonobu; Haruna, Tohru; and Takahashi, Masayuki, to Adeka Argus Chemical Co., Ltd. Alkylthiopropionyl hydrazino triazines and synthetic resin compositions. 4,469,828, Cl. 524-100.000.

Minami, Kazuaki: *See—*
Hasebe, Koshi; Totani, Shinzo; Muramoto, Kazuo; Mikuni, Hajime; Akutsu, Kazushi; and Minami, Kazuaki, 4,470,119, Cl. 364-449.000.

Minami, Shunji; and Kimura, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Motorcycle with turbo-charger. 4,469,189, Cl. 180-219.000.

Minamoto, Yoshiki: *See—*
Yamane, Isao; Sato, Takeshi; Kudo, Toshio; Minamoto, Yoshiki; and Tachibana, Takehiko, 4,469,790, Cl. 435-68.000.

Mine, Paul. Wireline guiding apparatus. 4,469,171, Cl. 166-85.000.

Ministry of International Trade & Industry: *See—*
Abe, Takashi; Baba, Hajime; Hayashi, Eiji; and Nagase, Shunji, 4,469,879, Cl. 549-465.000.
Kaminishi, Tokishi, 4,470,040, Cl. 340-566.000.

Minnesota Mining and Manufacturing Company: *See—*
Danielson, Richard D.; and Prokop, Robert A., 4,469,623, Cl. 252-408.100.
Doering, Arlin B.; and Lindberg, Terrance D., 4,470,083, Cl. 360-97.000.
Haskett, Thomas E.; and Schmitt, Joseph J., 4,469,654, Cl. 264-62.000.
John, Gunther, 4,469,857, Cl. 528-59.000.
Maffitt, Kent N.; Robbins, William B.; and Willson, Richard F., 4,470,053, Cl. 346-135.100.

Mino, Mitsuo, to Japan Broadcasting Corp. Automatic gain control apparatus. 4,470,067, Cl. 358-174.000.

Minobe, Tomio: *See—*
Hayashi, Keizo; Sumida, Atsushi; Murayama, Teruo; and Minobe, Tomio, 4,469,817, Cl. 521-45.000.

Minoda, Minoru: *See—*
Ishiwata, Mamoru; and Minoda, Minoru, 4,469,782, Cl. 430-502.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ishida, Tokuji; and Hosomizu, Hiroshi, 4,469,419, Cl. 354-127.100.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazubiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,469,437, Cl. 355-68.000.

Minoru, Ishida. Drive mechanism for toy running vehicles. 4,469,197, Cl. 185-45.000.

Minto, Manoor A.; and Storey, Dennis G., to Kimberly-Clark Limited. Microfibre web products. 4,469,734, Cl. 428-134.000.

Mireles-Saldivar, Jose M., to Cuprum, S.A. Apparatus for manufacturing frames from aluminum profile rails. 4,468,995, Cl. 83-620.000.

Mita Industrial Co., Ltd.: *See—*
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,469,431, Cl. 355-3.0SH.

Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,469,432, Cl. 355-3.00R.
Nakazawa, Toru; Fushida, Akira; and Kamezaki, Yasushi, 4,469,769, Cl. 430-78.000.
Yoshioka, Masahiro; Murakami, Masahiro; Tsutsui, Eiji; and Iwao, Noriyuki, 4,469,428, Cl. 355-3.0CH.
Mita, Yoshinori, to Honda Giken Kogyo Kabushiki Kaisha. Articulated tricycle. 4,469,188, Cl. 180-215.000.
Mitchell, Clair E., to Ford Motor Company. Voltage regulator with temperature responsive circuitry for reducing alternator output current. 4,470,003, Cl. 322-23.000.
Mitchell, Gerald L.; Woerz, Stephen E.; and Setty, Thomas J., to Boise Cascade Corporation. Spin-bonding apparatus including an axially displaceable spinner member. 4,469,547, Cl. 156-423.000.
Mitchell, Thomas A.: *See*—
Bennett, John E.; Harney, David E.; and Mitchell, Thomas A., 4,469,761, Cl. 429-50.000.
Mitsubishi Chemical Industries Limited: *See*—
Takeuchi, Tsutomu; Nishi, Mineo; Irie, Toshio; and Ryuto, Hirotaka, 4,469,882, Cl. 560-25.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujikawa, Katsuhiro, 4,469,038, Cl. 112-277.000.
Iwaki, Yoshiyuki; and Matsumoto, Akio, 4,469,966, Cl. 310-62.000.
Kato, Yoshito; Hashimoto, Toshio; and Kimura, Masatoshi, 4,470,108, Cl. 364-167.000.
Maehara, Shigeto, 4,469,954, Cl. 290-1.00A.
Mizuno, Masanori; Segawa, Hirohisa; and Mizuno, Takaji, 4,469,933, Cl. 219-130.210.
Morishita, Mitsuharu; and Kouge, Shinichi, 4,470,004, Cl. 322-99.000.
Noguchi, Yoshihiro; and Nakajima, Toshio, 4,469,283, Cl. 241-48.000.
Takeshita, Hiroshi, 4,468,958, Cl. 73-118.000.
Toshiro, Akira; and Osaki, Yoshihiko, 4,469,925, Cl. 219-10.49R.
Tsuchihashi, Michihiro; Anzai, Yoshinori; Kajiwara, Toshiro; and Saikatsu, Takeo, 4,469,986, Cl. 313-610.000.
Yamasaki, Toshihiro; and Jinbo, Kensaku, 4,468,955, Cl. 73-117.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Gaku, Morio; and Ikeguchi, Nobuyuki, 4,469,859, Cl. 528-159.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Fujita, Yasuhiko, 4,468,982, Cl. 74-762.000.
Hiramatsu, Takeo, 4,468,988, Cl. 74-868.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Konda, Koichi; and Shinohara, Shoji, 4,469,312, Cl. 266-99.000.
Mitsubishi Rayon Company Limited: *See*—
Kato, Masaaki; Kamogawa, Masatake; Nakano, Toshiharu; and Furuse, Junji, 4,469,810, Cl. 502-209.000.
Shibata, Kunio; Kanamura, Tomotsugu; and Nakamura, Tunehiko, 4,468,921, Cl. 57-333.000.
Yata, Yukio; Inagaki, Koichi; and Yatabe, Yoshio, 4,469,402, Cl. 350-128.000.
Mitsui, Katsuyuki: *See*—
Hirata, Atsumi; Mitsui, Katsuyuki; and Koumatsu, Yasutaka, 4,470,078, Cl. 358-342.000.
Mitsui Mining Company Limited: *See*—
Hamada, Takeshi; and Komatsubara, Yoshinobu, 4,469,662, Cl. 423-235.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Mori, Ado, 4,469,853, Cl. 526-59.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Sekiguchi, Haruo; Tagawa, Kimiteru; Ohshima, Kazushi; and Fukuda, Nobuhiro, 4,469,506, Cl. 75-0.5AA.
Sekiguchi, Haruo; Sudoh, Kazufuyu; Kobayashi, Sadao; and Fukuda, Nobuhiro, 4,469,507, Cl. 75-0.5AA.
Mittelhauser, Bernhard. Rear-view mirror for a motor vehicle. 4,469,406, Cl. 350-307.000.
Miura, Kiyoshi: *See*—
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; and Tomita, Yoshifumi, 4,469,766, Cl. 430-23.000.
Miwa, Hiroaki: *See*—
Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, 4,470,072, Cl. 358-260.000.
Miyasaka, Masao: *See*—
Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, 4,469,264, Cl. 226-74.000.
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, to Olympus Optical Company Limited. Collator with collate mode, non-collate mode and job separation mode. 4,469,323, Cl. 271-288.000.
Miyazi, Kazumi; and Tomabechi, Hideo, to Olympus Optical Co., Ltd. Reel shaft. 4,469,293, Cl. 242-200.000.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, to Mita Industrial Co., Ltd. Electrostatic copying apparatus with sheet feeder. 4,469,431, Cl. 355-3.0SH.
Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, to Mita Industrial Co., Ltd. Electrostatic copying apparatus with cooling system. 4,469,432, Cl. 355-3.00R.
Mizukami, Osamu: *See*—
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,752, Cl. 428-475.800.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, 4,469,753, Cl. 428-475.800.
Mizuno, Masanori; Segawa, Hirohisa; and Mizuno, Takaji, to Mitsubishi Denki Kabushiki Kaisha. Consumable electrode type arc welding power source. 4,469,933, Cl. 219-130.210.
Mizuno, Takaji: *See*—
Mizuno, Masanori; Segawa, Hirohisa; and Mizuno, Takaji, 4,469,933, Cl. 219-130.210.
Mizuno, Yoji: *See*—
Yokoi, Masatada; Kondo, Toshio; Katagiri, Masayoshi; Kaisaku, Tetsuo; and Mizuno, Yoji, 4,469,337, Cl. 277-212.0FB.
Mkitarian, Alan W.: *See*—
Wilkinson, Harold C.; Mkitarian, Alan W.; Navarra, Vito P.; and Preston, Francis J., 4,469,928, Cl. 219-98.000.
Mobil Oil Corporation: *See*—
Anderson, James J., 4,469,821, Cl. 521-131.000.
Audeh, Costandi A.; and Yan, Tsoung-Yuan, 4,469,807, Cl. 502-74.000.
Burress, George T., 4,469,908, Cl. 585-467.000.
Chester, Arthur W.; and Chu, Yung-Feng, 4,469,909, Cl. 585-481.000.
Dessau, Ralph M., 4,469,913, Cl. 585-828.000.
Edgerton, Gene A.; Engel, John H.; Ottsen, Henning; Seal, Henry A.; and Wadsworth, Joseph F., 4,469,392, Cl. 339-117.00R.
Forbus, Nancy P.; and Kaeding, Warren W., 4,469,806, Cl. 502-62.000.
Schmitt, Kirk D., 4,469,607, Cl. 252-8.55D.
Venkatesan, V. N., 4,469,177, Cl. 166-261.000.
Yan, Tsoung Y., 4,469,032, Cl. 110-342.000.
Moen, Alfred M., to Stanadyne, Inc. Cycle valves. 4,469,121, Cl. 137-100.000.
Mogi, Kinichi: *See*—
Satoh, Susumu; Mogi, Kinichi; Murakami, Saburo; and Nakashima, Toshiaki, 4,469,704, Cl. 424-312.000.
Mohr, Daniel R. Virtual ground preamplifier for magnetic phono cartridge. 4,470,020, Cl. 330-304.000.
Mokrzycki, Eugene H.: *See*—
Grierson, Keith J.; and Mokrzycki, Eugene H., 4,469,967, Cl. 310-71.000.
Monarch Mirror Door Co., Inc.: *See*—
Kain, Don S., 4,469,737, Cl. 428-198.000.
Monitronix Systems Limited: *See*—
Walkey, Laurence J.; Woolf, Anthony J.; and Ballard, George S., 4,469,149, Cl. 141-94.000.
Monsanto Company: *See*—
Chupp, John P.; Neumann, Thomas E.; and Miller, Michael J., 4,469,890, Cl. 564-417.000.
Maender, Otto W., 4,469,874, Cl. 548-475.000.
Montedison S.p.A.: *See*—
Ferraris, Mario; and Rosati, Francesco, 4,469,648, Cl. 264-9.000.
Moog, Walter: *See*—
Radtke, Wolfgang; Schmidt, Friedrich H.; Reuter, Fritz; Moog, Walter; and Borbely, Gyorgy, 4,468,908, Cl. 52-483.000.
Moore, M. Samuel, to Semco Instruments, Inc. Turbine engine power optimization control system. 4,468,924, Cl. 60-39.281.
Moore, Michael L.: *See*—
Huffman, William F.; and Moore, Michael L., 4,469,679, Cl. 424-177.000.
Huffman, William F.; and Moore, Michael L., 4,469,680, Cl. 424-177.000.
Moore, Richard A.: *See*—
Stolz, Theodore O.; Moore, Richard A.; and Lutz, James P., 4,469,822, Cl. 521-167.000.
Moore, Victor A., to Canadian General Electric Company, Ltd. Stator slot wedge assembly with axial spring retainer. 4,469,971, Cl. 310-214.000.
Moore, Vincent, to American Sterilizer Company. Sealing apparatus with sealing device operable under pressure differential established thereacross. 4,469,335, Cl. 277-27.000.
Moores, Robert G., Jr., to Black & Decker Inc. Hammer-drill for masonry fasteners. 4,468,826, Cl. 7-158.000.
Morales, Alfredo L.: *See*—
Galiasso Tailleur, Roberto E.; Salazar Guillen, Jose A.; Huskey, Donald; Morales, Alfredo L.; and Aquino, Luig G., 4,469,587, Cl. 208-61.000.
Morgan, John A., to Phillips Petroleum Company. Control of dumping of a reactor. 4,469,560, Cl. 203-2.000.
Mori, Ado, to Mitsui Petrochemical Industries, Ltd. Process for preparing polyolefins. 4,469,853, Cl. 526-59.000.
Mori, Ichiro; Sugihara, Kazuyoshi; Shinozaki, Toshiaki; and Tojo, Toru, to Kabushiki Kaisha Toshiba. Electron beam pattern transfer device and method for aligning mask and semiconductor wafer. 4,469,949, Cl. 250-491.100.
Mori, Mitsuhiko: *See*—
Fujiwara, Yuji; Muramatsu, Shigeru; Mori, Mitsuhiko; and Sawase, Takamichi, 4,469,000, Cl. 84-115.000.
Morikawa, Tsuneo; and Kabe, Kazuyuki, to Yokohama Rubber Co., Ltd., The. Pneumatic tire. 4,469,157, Cl. 152-354.00R.
Morikawa, Tsuneo: *See*—
Kabe, Kazuyuki; and Morikawa, Tsuneo, 4,469,158, Cl. 152-354.00R.
Morio, Minoru: *See*—
Arai, Masaaki; Kanbara, Masahiro; and Morio, Minoru, 4,470,076, Cl. 358-312.000.
Morishita, Mitsuharu; and Kouge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Charge indicating system. 4,470,004, Cl. 322-99.000.

Morita, Hiroshi; Kato, Taketoshi; Washida, Hiroshi; and Onoe, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a solar cell. 4,468,853, Cl. 29-572.000.
Morita, Yasuyuki: *See*—
Sano, Reiji; Morita, Yasuyuki; Kawauchi, Yoshikazu; Kimura, Minoru; and Takahashi, Hidemi, 4,470,144, Cl. 372-61.000.
Morris, R. Scott: *See*—
Walsh, Fraser; and Morris, R. Scott, 4,469,763, Cl. 429-101.000.
Morris, Thomas E., to Dow Chemical Company, The. Solvent recovery system. 4,469,720, Cl. 427-345.000.
Morrisette, Milton J., to Kidde, Inc. Apparatus for mixing and dispensing liquids. 4,469,153, Cl. 141-364.000.
Morrison, Richard A. Mat module with ramp strip. 4,468,910, Cl. 52-591.000.
Morrison, Terry, to Chandler Evans Inc. Gas turbine engine fuel control. 4,470,118, Cl. 364-431.020.
Moser, Winfried: *See*—
Linder, Ernst; Linn, Karl-Otto; Moser, Winfried; Muller, Klaus; and Zabler, Erich, 4,468,949, Cl. 73-35.000.
Mosher, Joseph C.: *See*—
Grote, Daniel; Raymond, Duane; and Mosher, Joseph C., 4,469,317, Cl. 269-69.000.
Motomura, Jiro; Watanabe, Kazuaki; and Nishikawa, Seiichi, to Aisin Warner Kabushiki Kaisha. Hydraulically-operated frictional engagement device. 4,469,206, Cl. 192-3.280.
Motorola Inc.: *See*—
Guertin, Patrick W., 4,470,096, Cl. 361-277.000.
Luke, Kevin; and Allgood, Robert N., 4,469,959, Cl. 307-264.000.
McCartney, William J.; Jacobs, Jerome D.; and Keil, Mitchel J., 4,469,765, Cl. 429-123.000.
Raghunathan, Kuppuswamy, 4,469,960, Cl. 307-264.000.
Mott, Lambert H. Chromatographic column terminator assembly. 4,469,597, Cl. 210-198.200.
Mott, Richard C.; Kroll, Robert T., Jr.; and Assal, Tsvi F., to Communications Satellite Corporation. Satellite-receiver time division multiple-access burst duration and guard space monitor. 4,470,148, Cl. 375-113.000.
Mount Sinai School of Medicine of the City University of New York, The: *See*—
Garro, Anthony J.; and Phillips, Robert A., 4,469,786, Cl. 435-5.000.
Mrozik, Helmut H., to Merck & Co., Inc. Avermectin and milbemycin phosphate esters, pharmaceutical compositions, and method of use. 4,469,682, Cl. 424-180.000.
Mueller, Richard A.; and Partis, Richard A., to G. D. Searle & Co. Halogenated protease inhibitors. 4,469,885, Cl. 562-459.000.
Muenzen, Joseph P.: *See*—
Haas, David J.; Blionas, Costas; and Muenzen, Joseph P., 4,469,403, Cl. 350-254.000.
Mull, Lee R.; and Propster, Mark A., to Owens-Corning Fiberglas Corporation. Gas-solid counterflow vessel. 4,468,868, Cl. 34-165.000.
Muller, Jacques, to E.T.A., S.A., Fabriques d'Ebauches. Setting mechanism for a watch. 4,469,448, Cl. 368-196.000.
Muller, Klaus: *See*—
Brosdetzko, Hubert; Gerster, Wolfgang; and Muller, Klaus, 4,469,332, Cl. 277-12.000.
Linder, Ernst; Linn, Karl-Otto; Moser, Winfried; Muller, Klaus; and Zabler, Erich, 4,468,949, Cl. 73-35.000.
Multinorm B.V.: *See*—
Vissers, Hermanus H.; Van Staveren, Hendrikus C.; and Westrate, Marinus H., 4,468,916, Cl. 56-13.600.
Munih, Pavel, to Sava Kranj Industrija gumijevih, usnjenih in kemicnih izdelkov n.Isol.o. Method and arrangement for separating rubber from metal. 4,469,573, Cl. 204-155.000.
Munoz, Joseph V.: *See*—
Merrel, Richard C., 4,468,897, Cl. 51-259.000.
Munteanu, Marina A.; Oltarzewski, Edward S.; Shechter, Leon; and Warren, Craig B., to International Flavors & Fragrances Inc. Detergent bar containing poly(epsilon caprolactone) and aromatizing agent. 4,469,613, Cl. 252-92.000.
Munter, Ernst A., to Northern Telecom Limited. Switching network for use in a time division multiplex system. 4,470,139, Cl. 370-66.000.
Murakami, Masahiro: *See*—
Yoshioka, Masahiro; Murakami, Masahiro; Tsutsui, Eiji; and Iwao, Noriyuki, 4,469,428, Cl. 355-3.0CH.
Murakami, Saburo: *See*—
Satoh, Susumu; Mogi, Kinichi; Murakami, Saburo; and Nakashima, Toshiaki, 4,469,704, Cl. 424-312.000.
Muramatsu, Akira, to Hitachi, Ltd. Semiconductor device having isolation regions. 4,470,062, Cl. 357-50.000.
Muramatsu, Shigeru: *See*—
Fujiwara, Yuji; Muramatsu, Shigeru; Mori, Mitsuhiko; and Sawase, Takamichi, 4,469,000, Cl. 84-115.000.
Muramoto, Kazuo: *See*—
Hasebe, Koshi; Totani, Shinzo; Muramoto, Kazuo; Mikuni, Hajime; Akutsu, Kazushi; and Minami, Kazuaki, 4,470,119, Cl. 364-449.000.
Murata Manufacturing Co., Ltd.: *See*—
Nakamura, Takeshi; and Nishiyama, Hiroshi, 4,469,975, Cl. 310-321.000.
Murata, Tadao: *See*—
Ito, Tatsuo; Murata, Tadao; Horiuchi, Miyoshi; and Goto, Masahiro, 4,469,269, Cl. 228-173.00C.
Murayama, Teruo: *See*—
Hayashi, Keizo; Sumida, Atsushi; Murayama, Teruo; and Minobe, Tomio, 4,469,817, Cl. 521-45.000.
Murphy, Bartholomew D.: *See*—
Lundberg, Richard E.; and Murphy, Bartholomew D., 4,469,994, Cl. 318-591.000.
Murphy, Preston V., to Lectret S.A. Piezoelectric film device for conversion between digital electric signals and analog acoustic signals. 4,469,920, Cl. 179-110.00A.
Murrer, Barry A.; and Jenkins, John W., to Johnson Matthey & Co., Limited. Method for the hydrogenation of emulsified unsaturated organic compounds. 4,469,849, Cl. 525-339.000.
Myers, John L., to Ledex, Inc. Trip solenoid. 4,470,030, Cl. 335-228.000.
Nabisco Brands, Inc.: *See*—
Rapp, Harold; and Dockendorf, William G., 4,469,708, Cl. 426-103.000.
Nadolna, Henryka A.: *See*—
Nadolny, Henry; and Nadolna, Henryka A., 4,468,828, Cl. 15-97.00R.
Nadolny, Henry; and Nadolna, Henryka A. Leaning tool. 4,468,828, Cl. 15-97.00R.
Nagahira, Joyji: *See*—
Takayanagi, Yoshiaki; Suzuki, Koji; Nagashima, Nao; Ogawa, Hiroshi; Kuroda, Kouki; and Nagahira, Joyji, 4,470,009, Cl. 324-72.000.
Nagase, Shunji: *See*—
Abe, Takashi; Baba, Hajime; Hayashi, Eiji; and Nagase, Shunji, 4,469,879, Cl. 549-465.000.
Nagashima, Nao: *See*—
Takayanagi, Yoshiaki; Suzuki, Koji; Nagashima, Nao; Ogawa, Hiroshi; Kuroda, Kouki; and Nagahira, Joyji, 4,470,009, Cl. 324-72.000.
Nagasuye, Joseph H.: *See*—
Assarsson, Per G.; and Nagasuye, Joseph H., 4,469,524, Cl. 127-1.000.
Nagata, Masayoshi: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,469,768, Cl. 430-58.000.
Nagaura, Yoshiaki. Apparatus for the manufacture of lens-like articles and the like. 4,468,890, Cl. 51-3.000.
Naito, Shunzo: *See*—
Nakajo, Jiro; and Naito, Shunzo, 4,468,919, Cl. 57-22.000.
Nakagawa, Sumio: *See*—
Maruhashi, Motokazu; and Nakagawa, Sumio, 4,469,839, Cl. 524-458.000.
Nakai, Masanori, to Tokyo Shibaura Denki Kabushiki Kaisha. Integrated injection logic. 4,470,061, Cl. 357-46.000.
Nakajima, Toshio: *See*—
Noguchi, Yoshihiro; and Nakajima, Toshio, 4,469,283, Cl. 241-48.000.
Nakajo, Jiro; and Naito, Shunzo, to Teijin Seiki Company Limited. Method of and apparatus for joining end portions of multifilament yarns. 4,468,919, Cl. 57-22.000.
Nakama, Kazuo: *See*—
Sugiura, Yasuyuki; and Nakama, Kazuo, 4,469,063, Cl. 123-308.000.
Nakamura, Keiichi; and Horiuchi, Hideyuki, to Tandy Corporation. Telephone answering device. 4,469,919, Cl. 179-6.060.
Nakamura, Koichi: *See*—
Hirai, Hiroyuki; Nakamura, Koichi; and Iwano, Haruhiko, 4,469,780, Cl. 430-373.000.
Nakamura, Kozo; and Kozima, Yasuyuki, to Hitachi, Ltd. Facsimile transmitter. 4,470,073, Cl. 358-261.000.
Nakamura, Makoto; Chiyoda, Tsutomu; and Hasegawa, Shinichi, to Sumitomo Chemical Company, Limited. Process for producing phloroglucin. 4,469,899, Cl. 568-768.000.
Nakamura, Nobuyuki: *See*—
Shirahata, Isao; Nakamura, Nobuyuki; Shioya, Shigeharu; and Hori, Hisako, 4,469,718, Cl. 427-120.000.
Nakamura, Takashi: *See*—
Ishikawa, Takatoshi; and Nakamura, Takashi, 4,469,781, Cl. 430-393.000.
Nakamura, Takayoshi; Maeda, Kazuo; Ohno, Masayuki; and Akiyama, Teruo, to Kabushiki Kaisha Kito. Lever hoist. 4,469,308, Cl. 254-350.000.
Nakamura, Takeshi; and Nishiyama, Hiroshi, to Murata Manufacturing Co., Ltd. Piezoelectric vibrator device including vibrator element and frame of unitary construction. 4,469,975, Cl. 310-321.000.
Nakamura, Tunehiko: *See*—
Shibata, Kunio; Kanamura, Tomotsugu; and Nakamura, Tunehiko, 4,468,921, Cl. 57-333.000.
Nakano, Fumio; Iwasaki, Kishiro; and Tanno, Seikichi, to Hitachi, Ltd. Homogeneous alignment layer for liquid crystal display device. 4,469,409, Cl. 350-341.000.
Nakano, Junji: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,469,768, Cl. 430-58.000.
Nakano, Toshiharu: *See*—
Kato, Masaaki; Kamogawa, Masatake; Nakano, Toshiharu; and Furuse, Junji, 4,469,810, Cl. 502-209.000.
Nakashima, Toshiaki: *See*—
Satoh, Susumu; Mogi, Kinichi; Murakami, Saburo; and Nakashima, Toshiaki, 4,469,704, Cl. 424-312.000.
Nakayama, Takehisa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method and apparatus for measuring the concentration of a gaseous or volatile substance in a liquid. 4,468,948, Cl. 73-19.000.
Nakayama, Toshio: *See*—
Mashimo, Katsuyuki; Masuda, Teruo; Nakayama, Toshio; Hashimoto, Masuyuki; and Kanai, Takeshi, 4,468,934, Cl. 62-495.000.

Nakazawa, Toru; Fushida, Akira; and Kamezaki, Yasushi, to Mita Industrial Co. Ltd. Photosensitive material for electrophotography contains halo-benzoquinone sensitizer. 4,469,769, Cl. 430-78.000.

Namba Press Works Co., Ltd.: *See*—
Kashihara, Jo.; and Oda, Etsusuke, 4,469,374, Cl. 297-284.000.

Namekawa, Takashi: *See*—
Arakawa, Hideo; Kuniya, Keiichi; Namekawa, Takashi; and Ohashi, Masabumi, 4,470,063, Cl. 357-67.000.

Napadow, Stanley C., to Protectaire Systems Company. Filter assembly for a spray booth. 4,469,595, Cl. 210-111.000.

Narhi, Erland D.: *See*—
Eaton, James W.; and Narhi, Erland D., 4,468,903, Cl. 52-105.000.

Narozny, Ronald S., to Thomas & Betts Corporation. Header for imposing frictional force on terminal posts. 4,469,388, Cl. 339-45.00M.

Naruse, Kazuhiko: *See*—
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, 4,469,437, Cl. 355-68.000.

Nathanson, James A., to Massachusetts General Hospital. Selective beta-2 adrenergic antagonists for the treatment of glaucoma. 4,469,706, Cl. 424-330.000.

National Distillers and Chemical Corporation: *See*—
Blewett, Charles W.; and Turner, Stephen W., 4,469,912, Cl. 585-525.000.
Fayter, Richard G., Jr.; and Hall, Allen L., 4,469,891, Cl. 568-031.000.

National Institute for Researches in Inorganic Materials: *See*—
Endo, Tadashi; Fukunaga, Osamu; and Sato, Tadao, 4,469,802, Cl. 501-96.000.

National Research Development Corporation: *See*—
Bodnworth, Colin, 4,469,511, Cl. 75-51.000.
Levitt, Malcolm H.; and Frenkiel, Thomas A., 4,470,014, Cl. 324-311.000.

National Semiconductor Corporation: *See*—
Haq, Nadeemul, 4,469,723, Cl. 427-437.000.

Nauflett, George W.: *See*—
Gill, Robert C.; and Nauflett, George W., 4,469,888, Cl. 564-109.000.

Navarra, Vito P.: *See*—
Wilkinson, Harold C.; Mkitarian, Alan W.; Navarra, Vito P.; and Preston, Francis J., 4,469,928, Cl. 219-98.000.

NCR Corporation: *See*—
Jenkins, Alfred D.; and Heaton, William E., 4,470,111, Cl. 364-200.000.

Neil, Iain A., to Baar & Stroud Limited. Afocal dual magnification refractor telescopes. 4,469,396, Cl. 350-1.300.

Nelsen, Suzanne B.: *See*—
Charles, John J.; and Nelsen, Suzanne B., 4,469,851, Cl. 525-444.000.

Nelson Industries, Inc.: *See*—
Kersting, Darrel, 4,468,925, Cl. 60-322.000.

Nelson, Robert A., to Xerox Corporation. Styrene butadiene plasticizer toner composition blends. 4,469,770, Cl. 430-110.000.

Nelson, Roger J., to Deere & Company. Cylinder spacer. 4,469,014, Cl. 92-13.000.

Neumann, Thomas E.: *See*—
Chupp, John P.; Neumann, Thomas E.; and Miller, Michael J., 4,469,890, Cl. 564-417.000.

Neumann, Thomas W., to General Electric Company. Rotor for permanent magnet excited synchronous motor. 4,469,970, Cl. 310-156.000.

Newby, John C. Pump mechanism powered by gaseous expansion. 4,469,472, Cl. 417-61.000.

Newill, William J., to General Motors Corporation. Magnetic electrolyte destratification. 4,469,759, Cl. 429-10.000.

NGK Spark Plug Co., Ltd.: *See*—
Kimura, Yukihiro; and Nozaki, Shunkichi, 4,469,658, Cl. 419-9.000.
Takeda, Tooru; Hayakawa, Masakatsu; and Inoue, Yasuo, 4,468,947, Cl. 72-467.000.

Nicholls, Lawrence G.; and Powell, George B., to Lucas Industries public limited company. Self-pumping struts for vehicle suspension systems. 4,469,315, Cl. 267-64.170.

Nicholson, Raymond; and Parker, Donald O. Coin detector system. 4,469,213, Cl. 194-100.00A.

Nicolas, Guy R. Chromium-base coating for wear-resistant steel and method of preparing same. 4,469,532, Cl. 148-6.350.

Nicolas, Yves M. L.: *See*—
Duret, Maurice L.; and Nicolas, Yves M. L., 4,469,356, Cl. 285-332.000.

Nieh, Edward C. Y., to Texaco Inc. Vinyl pyridinium monomers. 4,469,873, Cl. 546-344.000.

Nifco Inc.: *See*—
Omata, Nobuaki, 4,468,836, Cl. 16-82.000.

Niida, Taro: *See*—
Tsuruoka, Takashi; Imai, Satoshi; Satoh, Atsuyuki; Watanabe, Tetsuro; Watanabe, Koji; Inouye, Shigeharu; and Niida, Taro, 4,469,643, Cl. 260-502.50G.

Niinivuo, Henrik. Decorative illumination setup. 4,469,726, Cl. 423-13.000.

Nijhuis, Johan W., to Machinefabriek G.J. Nijhuis B.V. Apparatus for automatically stunning animals to be slaughtered. 4,468,837, Cl. 17-1.00E.

Nilsson, Sven W., to SKF Nova AB. Planetary gearing system. 4,468,985, Cl. 74-801.000.

Nippon Chemi-Con Corporation: *See*—
Fukuda, Katsuaki; and Ito, Takato, 4,469,610, Cl. 252-62.200.

Nippon Clean Engine Research Institute Co., Ltd.: *See*—
Onishi, Sigeru; Jo, Souk H.; Jo, Pan D.; and Kato, Satoshi, 4,469,054, Cl. 123-73.00R.

Nippon Electric Co., Ltd.: *See*—
Kitamura, Mitsuhiro; Kobayashi, Kohroh; and Sugimoto, Shigetoki, 4,470,143, Cl. 372-50.000.
Nishitoba, Shigeo; and Fukaya, Hirokazu, 4,469,082, Cl. 123-609.000.
Oura, Toshio, 4,470,113, Cl. 364-200.000.
Takada, Masami, 4,470,141, Cl. 370-104.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Fujiwara, Yuji; Muramatsu, Shigeru; Mori, Mitsuhiko; and Sawase, Takamichi, 4,469,000, Cl. 84-115.000.
Kurosaki, Makoto, 4,469,004, Cl. 84-411.00P.

Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Maruhashi, Motokazu; and Nakagawa, Sumio, 4,469,839, Cl. 524-458.000.

Nippon Kogaku K.K.: *See*—
Kimura, Makoto; Tomino, Naoki; Magariyama, Kenichi; and Shiokama, Yoshiharu, 4,469,422, Cl. 354-286.000.
Uematsu, Kimio, 4,469,420, Cl. 354-153.000.
Utagawa, Ken, 4,469,939, Cl. 250-204.000.

Nippon Oil Co., Ltd.: *See*—
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,469,667, Cl. 423-447.100.

Nippon Oil and Fats Co. Ltd.: *See*—
Komai, Takeshi; Izumi, Toshihiro; and Suyama, Syuji, 4,469,862, Cl. 528-271.000.

Nippon Steel Chemical Co., Ltd.: *See*—
Kaneyasu, Masataka; and Hara, Tadanori, 4,469,878, Cl. 549-248.000.

Nippondenso Co., Ltd.: *See*—
Hasebe, Koshi; Totani, Shinzo; Muramoto, Kazuo; Mikuni, Hajime; Akutsu, Kazushi; and Minami, Kazuaki, 4,470,119, Cl. 364-449.000.
Kosuge, Shuichi, 4,470,035, Cl. 340-52.00R.
Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Horiuchi, Yasuhiro, 4,469,068, Cl. 123-447.000.
Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Kawai, Shizuo, 4,469,069, Cl. 123-447.000.
Takao, Mitsunori; and Kinugawa, Masumi, 4,469,074, Cl. 123-492.000.

Nishi, Mineo: *See*—
Takeuchi, Tsutomu; Nishi, Mineo; Irie, Toshio; and Ryuto, Hirotaka, 4,469,882, Cl. 560-25.000.

Nishide, Toshio: *See*—
Shingu, Hideo; Arai, Kozo; Sakaguchi, Masashi; Nishide, Toshio; Watanabe, Osamu; Tashiro, Yasushi; Otsuka, Ryotatsu; and Tsukamoto, Kenji, 4,469,512, Cl. 75-63.000.

Nishijima, Kazuyoshi: *See*—
Takahara, Michiyoshi; Saegusa, Nobuo; and Nishijima, Kazuyoshi, 4,468,978, Cl. 74-552.000.

Nishikawa, Seiichi: *See*—
Motomura, Jiro; Watanabe, Kazuaki; and Nishikawa, Seiichi, 4,469,206, Cl. 192-3.280.

Nishino, Atsushi; Kimura, Kunio; Ikeda, Masaki; and Oyabu, Hajime, to Matsushita Electric Industrial Company, Limited. Low melting, opaque enamel frit. 4,469,798, Cl. 501-14.000.

Nishino, Shinichi: *See*—
Kozawa, Hiroomi; Nishino, Shinichi; and Katagiri, Shigenobu, 4,469,453, Cl. 384-117.000.

Nishitoba, Shigeo; and Fukaya, Hirokaza, to Nippon Electric Co., Ltd. Pulse width control circuit in which a feedback amount is varied depending upon an operating temperature. 4,469,082, Cl. 123-609.000.

Nishiwaki, Kenichi: *See*—
Wada, Masatoshi; Konaga, Nobuyuki; Nishiwaki, Kenichi; and Kobori, Yasuhiro, 4,469,714, Cl. 427-54.100.

Nishiyama, Hiroshi: *See*—
Nakamura, Takeshi; and Nishiyama, Hiroshi, 4,469,975, Cl. 310-321.000.

Nishizawa, Jun-ichi; and Ohmi, Tadahiro, to Zaidan Hojin Handotai Kenkyu Shinkokai. Gallium arsenide static induction transistor. 4,470,059, Cl. 357-22.000.

Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; and Tomita, Yoshifumi, to Hitachi, Ltd. Method of forming cathode-ray tube phosphor screen. 4,469,766, Cl. 430-23.000.

Nissan Motor Company, Limited: *See*—
Ikegami, Shinzi; and Tezuka, Koichi, 4,469,062, Cl. 123-306.000.
Ishigami, Kazuhiro; and Yuzawa, Haruo, 4,468,950, Cl. 73-35.000.
Sakurai, Yukio, 4,469,053, Cl. 123-41.120.
Takahara, Michiyoshi; Saegusa, Nobuo; and Nishijima, Kazuyoshi, 4,468,978, Cl. 74-552.000.

Nissen, Dietmar; and Hickmann, Eckhard, to BASF Aktiengesellschaft. Process for the preparation of molded parts of polyurethane or polyurethane-polyurea employing monocyclic amidines. 4,469,653, Cl. 264-51.000.

Nisshin Kogyo Kabushiki Kaisha: *See*—
Seki, Masayuki, 4,469,008, Cl. 91-376.00R.

Nitta, Hideo: *See*—
Asano, Hiroshi; Shimamune, Takayuki; and Nitta, Hideo, 4,469,581, Cl. 204-290.00F.

Nittan Company, Limited: *See*—
Fujisawa, Takao; Saito, Masayoshi; Yamada, Kohei; and Tsubouchi, Seiji, 4,469,953, Cl. 250-574.000.

Niwa, Yukichi: *See*—
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,469,417, Cl. 354-404.000.
Nodet-Gougis: *See*—
Maury, Jean-Pierre, 4,469,244, Cl. 221-200.000.
Noel, Judith: *See*—
Nunnery, Merle W.; and Noel, Judith, 4,468,817, Cl. 2-181.000.
Noguchi, Naoki: *See*—
Tanaka, Masaru; Noguchi, Naoki; and Ishida, Kozo, 4,469,946, Cl. 250-373.000.
Noguchi, Yoshihiro; and Nakajima, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Coffee mill. 4,469,283, Cl. 241-48.000.
Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Three-phase power factor controller with induced emf sensing. 4,469,998, Cl. 318-729.000.
Nolan, Ruth L.: *See*—
Harris, Frank E., deceased; and Lovejoy, Beverly I., administratix, 4,468,888, Cl. 49-396.000.
Nonogaki, Saburo: *See*—
Iwayanagi, Takao; Kohashi, Takahiro; Nonogaki, Saburo; and Hatano, Yoshio, 4,469,778, Cl. 430-325.000.
NORD BITUMI di Marco Danese & C. s.a.s.: *See*—
Saracino, Paolo, 4,469,731, Cl. 428-68.000.
Nordson Corporation: *See*—
Petrecca, Peter J., 4,469,248, Cl. 222-48.000.
Norimoto, Misato; and Hasegawa, Kenji. Method and apparatus for shaping wood material into a predetermined configuration. 4,469,156, Cl. 144-380.000.
Norris, Philip R.: *See*—
Cocco, Vincent L.; and Norris, Philip R., 4,469,425, Cl. 354-310.000.
Norsk Hydro a.s.: *See*—
Roed, Finn, 4,469,281, Cl. 241-1.000.
North American Philips Corporation: *See*—
Haas, David J.; Blionas, Costas; and Muenzen, Joseph P., 4,469,403, Cl. 350-254.000.
Northern Telecom Limited: *See*—
Munter, Ernst A., 4,470,139, Cl. 370-66.000.
Perry, Kenneth R.; and Campbell, Alexander F., 4,468,842, Cl. 24-279.000.
Norton Co.: *See*—
Scott, John J., 4,469,758, Cl. 428-693.000.
Norton, Larry G. Shop light. 4,470,106, Cl. 362-398.000.
Norwood, William J., III: *See*—
Sayles, James A.; and Norwood, William J., III, 4,468,975, Cl. 73-863.810.
Nosaki, Takefumi; and Hosoya, Masahiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Combination charging/cleaning arrangement for copier. 4,469,435, Cl. 355-15.000.
Novatome: *See*—
Malaval, Claude, 4,469,051, Cl. 122-507.000.
Nozaki, Shunkichi: *See*—
Kimura, Yukihiro; and Nozaki, Shunkichi, 4,469,658, Cl. 419-9.000.
Nudenberg, Walter: *See*—
Bandlish, Baldev K.; and Nudenberg, Walter, 4,469,609, Cl. 252-19.000.
Nugent, James H.; and Berger, Hans S., to Coleco Industries, Inc. Apparatus for generating rate signals. 4,470,012, Cl. 324-168.000.
Nunnery, Merle W.; and Noel, Judith. Perspiration band for headgear. 4,468,817, Cl. 2-181.000.
Nunokawa, Makoto: *See*—
Yamazaki, Yoshihiko; Yamamoto, Hitoshi; Furusawa, Kahei; Ejiri, Yoshihiro; and Nunokawa, Makoto, 4,469,401, Cl. 350-96.230.
Nystrom, Olle: *See*—
Eriksson, T. Lennart; Andersson, Ebert; and Nystrom, Olle, 4,469,034, Cl. 110-346.000.
Obara, Haruki; and Izumiya, Shunzo, to Fanuc Ltd. Power source arrangement for wire-cut, electric discharge machining. 4,469,927, Cl. 219-69.00C.
Oberle, Timothy T.; Schirmer, Henry G.; Bornstein, Norman D.; and Walters, Johnnie J., to W. R. Grace & Co., Cryovac Div. Pasteurizable, cook-in shrink film. 4,469,742, Cl. 428-215.000.
Obrist, Gerhard, to Aerosol Service AG. Two-compartment package. 4,469,252, Cl. 222-135.000.
Occidental Chemical Corporation: *See*—
Tang, David Y.; Cotter, Byron R.; and Goetz, Frederick J., 4,469,893, Cl. 568-424.000.
Octave-Plateau Electronics Inc.: *See*—
Bonanno, Carmine, 4,468,999, Cl. 84-1.100.
Oda, Etsusuke: *See*—
Kashihara, Jo.; and Oda, Etsusuke, 4,469,374, Cl. 297-284.000.
Odill, Frank J.; and Anderson, David E., to Cretex Companies, Inc., The. Manhole chimney seal. 4,469,467, Cl. 404-25.000.
Oesch, Gustav: *See*—
Gmeiner, Paul; and Oesch, Gustav, 4,469,444, Cl. 366-144.000.
Ogawa, Hiroshi: *See*—
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Fair, David L.; Woodard, Kenneth E., Jr.; and Dean, Robert A., 4,469,571, Cl. 204-98.000.
Ungarean, Gary L.; and Yarwood, John C., 4,469,165, Cl. 164-467.000.
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Poppi, Franco, 4,469,013, Cl. 91-495.000.
Olmstead, William N.: *See*—
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Kimura, Kenji, 4,470,080, Cl. 360-30.000.
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Taira, Akio, 4,469,404, Cl. 350-286.000.
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Omata, Nobuaki, to Nifco Inc. Door dampening mechanism having a non-rotatable vane. 4,468,836, Cl. 16-82.000.
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Iizuka, Kinji; Kamijo, Tetsuhide; Yamamoto, Ryoji; and Harada, Hiromu, 4,469,865, Cl. 548-341.000.
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Mull, Lee R.; and Propster, Mark A., 4,468,868, Cl. 34-165.000.
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Lanctot, Robert; and Silverwater, Bernard F., 4,468,954, Cl. 73-61.00R.
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Palmer, Leslie W., to United Technologies Corporation. Portable probe carrier. 4,470,016, Cl. 324-402.000.
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Curtis, Ralston; and Papanu, Steven C., 4,469,675, Cl. 424-78.000.
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Mueller, Richard A.; and Partis, Richard A., 4,469,885, Cl. 562-459.000.
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Armond, Joseph A.; Buky, Gabriel R.; and Patrick, Fred, 4,470,094, Cl. 361-149.000.
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Milberger, Walter E.; and Payer, Stephen F., 4,469,961, Cl. 307-270.000.
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Peers-Trevarton, Charles A., to Cordis Corporation. Multipolar connector for pacing lead. 4,469,104, Cl. 128-419.00P.
Pellegri, Alberto. Bathing cap. 4,468,815, Cl. 2-68.000.
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Meyer, Gunter; and Pennekamp, Ingbert, 4,469,217, Cl. 198-425.000.
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Veneklasen, Lee H.; and DeVore, William J., 4,469,948, Cl. 250-396.0ML.
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Meador, Neil A., 4,469,022, Cl. 101-38.00R.
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Manning, Harold E., 4,469,911, Cl. 585-515.000.
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Phelps, Sidney J. Tube chimes. 4,469,003, Cl. 84-404.000.
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Takahashi, Hideyuki; and Kenmotsu, Isami, 4,470,136, Cl. 369-77.100.
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Borror, Alan L.; and Ellis, Ernest W., 4,469,877, Cl. 549-21.000.
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Hughes, John J.; and Polk, Darryl R., 4,469,460, Cl. 400-322.000.
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Fischer, Paul; and Ponato, Etienne, 4,469,725, Cl. 428-13.000.
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PPG Industries, Inc.: *See—*
Korach, Malcolm, 4,469,808, Cl. 502-101.000.
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Gunn, William L.; and Preacher, Thomas, Jr., 4,469,113, Cl. 133-3.00E.
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Schwartz, Michael A.; and Yamagata, Toshio, 4,469,024, Cl. 101-147.000.
Preston, Francis J.: *See—*
Wilkinson, Harold C.; Mkitarian, Alan W.; Navarra, Vito P.; and Preston, Francis J., 4,469,928, Cl. 219-98.000.
Prestridge, Floyd L.: *See—*
Sublette, Kerry L.; and Prestridge, Floyd L., 4,469,582, Cl. 204-302.000.
Preuss, Bernhard: *See—*
Kummerow, Gerd; Troebel, Werner; Preuss, Bernhard; and Zeuke, Reinhard, 4,468,977, Cl. 74-108.000.
Prince Corporation: *See—*
Marcus, Konrad H.; and Cody, Michael J., 4,469,365, Cl. 296-37.700.
Prince Valve, Inc.: *See—*
Meek, Robert K., 4,469,122, Cl. 137-312.000.
Procter & Gamble Company, The: *See—*
Huggins, James E.; Batt, Mary L.; and Kozarek, William J., 4,469,684, Cl. 424-181.000.
Peterson, Donald J., 4,469,635, Cl. 260-403.000.
Rielley, Ronald A.; Krause, Kenneth W.; and Fishter, Steve G., 4,469,710, Cl. 426-541.000.
Trokhan, Paul D., 4,469,735, Cl. 428-154.000.
Weisman, Paul T.; and Retzsch, Herbert L., 4,469,746, Cl. 428-289.000.
Prokop, Robert A.: *See—*
Danielson, Richard D.; and Prokop, Robert A., 4,469,623, Cl. 252-408.100.
Prokopetz, Andrew T.: *See—*
Garcia, David B.; Sorenson, Bruce A.; Keith, Lawrence H.; Harless, James M.; Walters, Douglas B.; and Prokopetz, Andrew T., 4,468,951, Cl. 73-38.000.
Propster, Mark A.: *See—*
Mull, Lee R.; and Propster, Mark A., 4,468,868, Cl. 34-165.000.
Protectaire Systems Company: *See—*
Napadow, Stanley C., 4,469,595, Cl. 210-111.000.
Prudhomme, Pierre: *See—*
Petrimaux, Eric; and Prudhomme, Pierre, 4,469,128, Cl. 137-554.000.
Psychological Systems Corp.: *See—*
Pfister, Clifford O.; Strand, Alan L.; and Cormack, Robert W., 4,469,287, Cl. 242-67.30R.
Puls, Walter: *See—*
Rosentreter, Ulrich; Puls, Walter; and Bischoff, Hilmar, 4,469,696, Cl. 424-250.000.
Pusineri, Christian; and Goletto, Jean, to Hospal-Sodip SA. Mixtures of polymers for medical use. 4,469,827, Cl. 524-27.000.

Queen's University at Kingston: *See*—
Saunders, Gerald, 4,468,821, Cl. 3-18.000.

Quinn, John J.; Strom, Ulrich; and Chang, Leroy L., to United States of America, Navy. Superlattice ultrasonic wave generator. 4,469,977, Cl. 310-334.000.

R. Alkan & Cie: *See*—
Duclos, Didier A.; and Coutin, Pierre F., 4,468,843, Cl. 24-642.000.

Rackley, Robert L.: *See*—
Gretzinger, James; and Rackley, Robert L., 4,469,739, Cl. 428-198.000.

Radl, Bruce M., to Eikonix Corporation. Highly magnified stereo viewing. 4,469,415, Cl. 350-517.000.

Radtke, Wolfgang; Schmidt, Friedrich H.; Reuter, Fritz; Moog, Walter; and Borbely, Gyorgy, to Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG. Process and apparatus for producing a floor-, wall- or ceiling surface formed of individual assembly plates and provided with a covering. 4,468,908, Cl. 52-483.000.

Rafi-Zadeh, Hassan. Tool box for covered pickup trucks. 4,469,364, Cl. 296-37.600.

Raghunathan, Kuppuswamy, to Motorola, Inc. Voltage translating circuit. 4,469,960, Cl. 307-264.000.

Rakes, James M.: *See*—
Galetto, Louis V.; and Rakes, James M., 4,470,056, Cl. 346-154.000.

Ramachandran, Pallassana N.; and Grand, Paul S., to Colgate-Palmolive Company. Fabric softening heavy duty liquid detergent and process for manufacture thereof. 4,469,605, Cl. 252-8.700.

Ramond, Marcel. Universal work station, which can be transformed and adapted, allowing multiple and practical specific uses. 4,469,029, Cl. 108-3.000.

Ramousse, Patrick E.: *See*—
Bigo, Louis B.; and Ramousse, Patrick E., 4,469,012, Cl. 91-491.000.

Rampignon, Marc; and Chevance, Claude, to Compagnie Industrielle des Mecanismes. Commutator for a miniature electric motor. 4,469,972, Cl. 310-233.000.

Ranalli, Lawrence A. Protective cover arrangement for equipment. 4,469,238, Cl. 220-254.000.

Ranco Incorporated: *See*—
Boesing, Hans; and Gabler, Dieter, 4,469,133, Cl. 137-625.290.

Rao, Velliyur N. M.: *See*—
Carcia, Peter F.; Heinsohn, George E.; and Rao, Velliyur N. M., 4,469,640, Cl. 260-453.00P.

Rapp, Harold; and Dockendorf, William G., to Nabisco Brands, Inc. Egg product and process. 4,469,708, Cl. 426-103.000.

Rasmussen GmbH: *See*—
Sauer, Heinz; and Stichel, Willi, 4,468,840, Cl. 24-20.00R.

Rasor, William: *See*—
Stapleton, Craig A.; Rasor, William; and Cronce, Gary, 4,469,261, Cl. 224-321.000.

Rassey, Louis J. Fuel control valve. 4,469,070, Cl. 123-462.000.

Rasshofer, Werner; Thoma, Wilhelm; and Schmitz, Anton, to Bayer Aktiengesellschaft. Non-crystalline polyamine/carbonic acid salt compositions, a process for their preparation and their use for the production of polyurethane ureas, especially foamed coatings. 4,469,856, Cl. 528-45.000.

Rastetter, Adolf; and Schmalenbach, Erich, to Sitema, Gesellschaft fur Sicherheitstechnik und Maschinenbau mbH. Clamping device. 4,469,201, Cl. 188-67.000.

Ratchford, Michael, to United Technologies Corporation. Digital flight data recording system. 4,470,116, Cl. 364-424.000.

Rathburn, Lloyd C. Hydraulic pipe testing tool with combined anti-extrusion and anchor means. 4,468,952, Cl. 73-40.50R.

Rawlings, David L. Method of molding plastic contact lenses. 4,469,646, Cl. 264-2.200.

Raychem Corporation: *See*—
Martin, Charles L., 4,469,357, Cl. 285-381.000.

Raymond, Duane: *See*—
Grote, Daniel; Raymond, Duane; and Mosher, Joseph C., 4,469,317, Cl. 269-69.000.

Raytheon Company: *See*—
Laton, Richard W., 4,470,021, Cl. 331-56.000.
Phaneuf, Robert A.; and Kliger, Isaac E., 4,470,049, Cl. 343-17.10R.

RCA Corporation: *See*—
Dischert, Robert A.; and Walter, James M., 4,470,125, Cl. 364-760.000.
Griffis, Patrick D., 4,470,070, Cl. 358-198.000.
Hakala, David F., 4,469,563, Cl. 204-5.000.
Lewis, Henry G., Jr.; and Bolger, Thomas V., 4,470,069, Cl. 358-31.000.
Miller, Arthur, 4,469,500, Cl. 65-112.000.
Reitmeier, Glenn A., 4,470,065, Cl. 358-21.00R.
Rindal, Abraham E., 4,470,071, Cl. 358-198.000.

Reali, Aldo: *See*—
Chiarottino, Volmer; Poggio, Cesare; and Reali, Aldo, 4,470,110, Cl. 364-200.000.

Rebaudo, Amadeus P.; Gwerder, Art J.; Chow, William C.; and Ho, Stimson F., to Storage Technology Partners. Printed circuit board connector for use in computer systems. 4,470,100, Cl. 361-413.000.

Recognition Equipment Incorporated: *See*—
Lovelady, Kenneth T., 4,470,052, Cl. 346-75.000.

Redfern, John T.: *See*—
Cowen, Steven J.; Daughtry, James H.; Young, Christopher M.; and Redfern, John T., 4,469,399, Cl. 350-96.200.

Redington, Gordon F., to McQuay Inc. Damper apparatus. 4,469,132, Cl. 137-601.000.

Reece, Wendell D.: *See*—
Fox, Robert E.; and Reece, Wendell D., 4,469,185, Cl. 172-540.000.

Regie Nationale des Usines Renault: *See*—
Bascou, Jacques, 4,468,941, Cl. 70-241.000.

Reich, Frederich R., to Japan Crown Cork Co., Ltd. Detecting irregularities in a coating on a substrate. 4,469,442, Cl. 356-364.000.

Reid, William J.; and Capocci, Gerald A., to Ciba-Geigy Corporation. Stabilization systems for fiber finishes. 4,469,606, Cl. 252-8.800.

Reif, Robert B.: *See*—
McCrady, Paul E.; and Reif, Robert B., 4,468,922, Cl. 57-402.000.

Reil, Wilhelm, to Tetra Pak Development S.A. Method of making a piece of tube from a flat web of flexible material, and apparatus for carrying out the method. 4,469,542, Cl. 156-203.000.

Reimann, Hans: *See*—
Frydman, Allen; and Reimann, Hans, 4,469,600, Cl. 210-610.000.

Reinertsen, Tormod K.: *See*—
Ulrich, Hans; Eddins, Fred D.; Reinertsen, Tormod K.; D'Aguanno, Steven R.; and D'Ambra, Americo, Jr., 4,469,327, Cl. 273-1.0GG.

Reissenweber, Gernot; and Schirmer, Ulrich, to BASF Aktiengesellschaft. Preparation of n-methoxy-n-methylurethanes. 4,469,884, Cl. 560-160.000.

Reitmeier, Glenn A., to RCA Corporation. Adaptive error concealment using horizontal information determination from adjacent lines. 4,470,065, Cl. 358-21.00R.

Remington Ind. E Com. De Sistemas Para Escritorio S.A.: *See*—
Giolitti, Nicolo , 4,469,458, Cl. 400-214.000.

Remo, Inc.: *See*—
Hartry, Donald R., 4,469,001, Cl. 84-269.000.

Renaudin, Jean-Pierre: *See*—
Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, 4,469,499, Cl. 65-1.000.

Renix Electronique S.A.: *See*—
Mate, Jean-Luc, 4,469,081, Cl. 123-609.000.

Renken, Terry L.: *See*—
Sanderson, John R.; Watts, Lewis W., Jr.; Renken, Terry L.; and Vanderpool, Steven H., 4,469,880, Cl. 549-532.000.

Rennie, George K.: *See*—
Hooper, David C.; Johnson, George A.; Peter, Donald; and Rennie, George K., 4,469,848, Cl. 252-106.000.

Resch, Robert J.; Hazony, Dov; and Berris, Richard E., Jr., to Cyberex, Inc. Induction motor control. 4,470,001, Cl. 318-810.000.

Rest, Heinz: *See*—
Korner, Paul; Rest, Heinz; and Giese, Ralf, 4,469,352, Cl. 280-808.000.

Retzlaff, Ronald D.: *See*—
Harrison, Edwin L.; and Retzlaff, Ronald D., 4,468,875, Cl. 42-50.000.

Retzsch, Herbert L.: *See*—
Weisman, Paul T.; and Retzsch, Herbert L., 4,469,746, Cl. 428-289.000.

Reusch, Walter; and Schips, Gunther, to Sauter Feinmechanik GmbH. Tool turret. 4,468,991, Cl. 82-36.00A.

Reuter, Fritz: *See*—
Radtke, Wolfgang; Schmidt, Friedrich H.; Reuter, Fritz; Moog, Walter; and Borbely, Gyorgy, 4,468,908, Cl. 52-483.000.

Reynolds Metals Company: *See*—
Ashton, Richard F.; and Thompson, David S., 4,469,537, Cl. 148-440.000.

Rheometrics, Inc.: *See*—
Garritano, Ronald F., 4,468,953, Cl. 73-60.000.

"Rhewum" Rheinische Werkzeug- und Maschinenfabrik GmbH: *See*—
Krause, Rudolf; and Sapp, Gunter, 4,469,592, Cl. 209-322.000.

Rhodes, Richard P.; Hershkowitz, Frank; and Olmstead, William N., to Exxon Research and Engineering Co. Process for pyrolyzing oil-shale. 4,469,584, Cl. 208-11.00R.

Rhodes, William A. Air vibrated dust brush. 4,468,835, Cl. 15-381.000.

Rich, Donald S., to Thomas & Betts Corporation. Coaxial cable connector. 4,469,391, Cl. 339-97.00R.

Richardson-Vicks Inc.: *See*—
Shah, Nutan B.; and Schmidt, Nicholas F., 4,469,674, Cl. 424-52.000.

Richey, Warren F.: *See*—
Ishibe, Nobuyuki; Richey, Warren F.; and Wing, Milton S., 4,469,520, Cl. 106-291.000.

Ricoh Co., Ltd.: *See*—
Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,469,771, Cl. 430-126.000.
Yano, Takashi, 4,470,154, Cl. 455-607.000.

Rielley, Ronald A.; Krause, Kenneth W.; and Fishter, Steve G., to Procter & Gamble Company, The. Pourable solid shortening. 4,469,710, Cl. 426-541.000.

Ries, Donald L., to Rockwell International Corporation. Drive axle and fluid pump assembly. 4,468,981, Cl. 74-713.000.

Rieter Machine Works Limited: *See*—
Maurer, Andreas; Mandl, Gerhard; and Meile, Hanspeter, 4,469,214, Cl. 198-339.000.

Riley, Clyde H.: *See*—
Danielson, Glen; and Riley, Clyde H., 4,469,722, Cl. 427-423.000.

Rindal, Abraham E., to RCA Corporation. Television sound detection system using a frequency translation phase-locked loop. 4,470,071, Cl. 358-198.000.

Rine, James C.: *See*—
Brubaker, Ronald L.; Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,469,284, Cl. 241-25.0TR.

Rinker, James K. Three dimensional jigsaw puzzle. 4,469,331, Cl. 273-157.00R.

Ritter, Dale L., to International Paper Company. Carton blank and carton for a bicycle. 4,469,224, Cl. 206-335.000.
Rivadeneyra, Ricky R., to Soft Cell Products. Supplemental hand restraint device. 4,469,096, Cl. 128-133.000.
Rivers, Joseph T.: *See*—
Grot, Walther G.; Rivers, Joseph T.; and Silva, Raimund H., 4,469,744, Cl. 428-246.000.
Rivetti, Franco; Romano, Ugo; and Di Muzio, Nicola, to Anic S.p.A. Process for preparing monoalkylethers of hydroquinone and its derivatives. 4,469,897, Cl. 568-650.000.
Robb, Frank J.; and Wilczak, Fred F., to Xerox Corporation. Large document restacking system. 4,469,319, Cl. 271-3.100.
Robbins, William B.: *See*—
Maffitt, Kent N.; Robbins, William B.; and Willson, Richard F., 4,470,053, Cl. 346-135.100.
Robert Bosch GmbH: *See*—
Aschoff, Jorg; and Scheidel, Wolfgang, 4,469,166, Cl. 165-25.000.
Linder, Ernst; Linn, Karl-Otto; Moser, Winfried; Muller, Klaus; and Zabler, Erich, 4,468,949, Cl. 73-35.000.
Linder, Ernst, 4,469,058, Cl. 123-145.00A.
Meyer, Gunter; and Pennekamp, Ingbert, 4,469,217, Cl. 198-425.000.
Schauble, Werner, 4,468,963, Cl. 73-204.000.
Sumal, Jaihind S., 4,468,957, Cl. 73-118.000.
Vogele, Gunther; and Lemke, Kuno, 4,469,148, Cl. 141-87.000.
Robert Schenk GmbH & Co. KG: *See*—
Gier, Kurt, 4,469,347, Cl. 280-432.000.
Roberts, Royce G. Method and apparatus for tallying pipe. 4,468,959, Cl. 73-151.000.
Robicci, Pier L., to Industrie Pirelli S.p.A. Camouflage covering for snowy soils. 4,469,745, Cl. 428-283.000.
Robinson, Joseph G.; and Barnes, David I., to Coal Industry (Patents) Limited. Catalysts. 4,469,814, Cl. 502-263.000.
Rockafellow, Gary B., to Bonded Products, Inc. Extended valve box and process for securing extension to valve box. 4,469,115, Cl. 137-15.000.
Rockefeller University, The: *See*—
Brownlee, Michael; and Cerami, Anthony, 4,469,681, Cl. 424-178.000.
Rocks, James K.: *See*—
Magenheim, Bertram; and Rocks, James K., 4,470,123, Cl. 364-563.000.
Rockwell International Corporation: *See*—
Clark, James R., 4,469,015, Cl. 92-63.000.
Ghosh, Amit K.; Hamilton, C. Howard; and Paton, Neil E., 4,469,757, Cl. 428-614.000.
Ries, Donald L., 4,468,981, Cl. 74-713.000.
Schuster, Irving, 4,469,295, Cl. 244-135.00R.
Rockwell-Rimoldi S.p.A.: *See*—
Marchesi, Franco, 4,469,039, Cl. 112-323.000.
Rodengen, Jeffrey L. Measuring device. 4,468,860, Cl. 33-148.00H.
Roecks, Carl C., to Amistar Corporation. Pneumatic feed system for axial lead components. 4,469,268, Cl. 227-76.000.
Roed, Finn, to Norsk Hydro a.s. Method and apparatus for disintegration of solidified bath material on the residues of prebaked anodes from aluminium electrolysis cells. 4,469,281, Cl. 241-1.000.
Rohm and Haas Company: *See*—
Kowalski, Alexander; and Vogel, Martin, 4,469,825, Cl. 523-201.000.
Rohner, Joachim; Zumfeld, Heinz; and Mauries, Reinhard, to W. Schlafhorst & Co. Compressed gas splicing head. 4,468,918, Cl. 57-22.000.
Rolls Royce Limited: *See*—
Geary, Alan P., 4,469,470, Cl. 415-115.000.
Higginbotham, Gordon J. S.; Marjoram, John R.; and Horrocks, Frederick J., 4,469,161, Cl. 164-122.200.
Romano, Ugo: *See*—
Rivetti, Franco; Romano, Ugo; and Di Muzio, Nicola, 4,469,897, Cl. 568-650.000.
Rombusch, Konrad: *See*—
Konietzny, Alfred; Zagefka, Hans-Dieter; Rombusch, Konrad; and Bax, Hanns-Jorg, 4,469,829, Cl. 524-103.000.
Roqueta, Alex: *See*—
Zison, Stanley W.; and Roqueta, Alex, 4,469,176, Cl. 166-250.000.
Rosati, Francesco: *See*—
Ferraris, Mario; and Rosati, Francesco, 4,469,648, Cl. 264-9.000.
Rose, Edward; and Weber, David E., to Peters Machinery Company. Dual feed stencil assembly for a sandwiching machine. 4,469,021, Cl. 99-450.400.
Rosemount Inc.: *See*—
Snyder, Robert K., 4,469,303, Cl. 248-634.000.
Rosen, Hans-Georg; and Wittmann, Julius, to Siemens Aktiengesellschaft. Method for securing optical and electro-optical components. 4,469,929, Cl. 219-121.0LD.
Rosen, Stanley D., to Ford Motor Company. Power transmission mechanism with a hydrokinetic torque converter having a lockup clutch. 4,468,989, Cl. 74-869.000.
Rosenquist, Niles R., to General Electric Company. Aromatic polycarbonate resin end capped with hydroxy arylene sulfonate. 4,469,860, Cl. 528-196.000.
Rosentreter, Ulrich; Puls, Walter; and Bischoff, Hilmar, to Bayer Aktiengesellschaft. Substituted 2-amino-pyridine derivative compounds, their production and their medicinal use. 4,469,696, Cl. 424-250.000.
Ross, John H.: *See*—
DeBaun, Jack R.; Pallos, Ferenc M.; Matsumoto, Kent E.; and Ross, John H., 4,469,701, Cl. 424-267.000.
Ross, Julian R. H.: *See*—
Sambrook, Rodney M.; and Ross, Julian R. H., 4,469,815, Cl. 502-303.000.
Rossmann, Rudolf, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Projectile containing a flare composition sleeve and method for securing the flare composition sleeve in a bore at the tail of a projectile body. 4,468,846, Cl. 29-1.230.
Roussel, Robert, to Societe Chimiques des Charbonnages. Process for preparing graft styrene copolymers. 4,469,847, Cl. 525-89.000.
Rubner, Roland: *See*—
Kruger, Hans; and Rubner, Roland, 4,469,408, Cl. 350-340.000.
Rudolph, Gunter: *See*—
Hanas, Bertil; and Rudolph, Gunter, 4,469,162, Cl. 164-154.000.
Ruetz, Lothar: *See*—
Bruck, Dieter W.; Jeblick, Werner; and Ruetz, Lothar, 4,469,830, Cl. 524-109.000.
Ruff, Reinhard; Haydn, Friedrich; and Ebhardt, Horst, to Elektro Neon Elger Ges.m.b.H. Dr. H. Ebhardt and H. Stark. Circuit for the operating of gas discharge lamps. 4,469,981, Cl. 315-205.000.
Rumsey, Joseph F., Jr. Utility ladder. 4,469,193, Cl. 182-22.000.
Rutgers Research & Educational Foundation: *See*—
Seltzer, Edward, 4,469,711, Cl. 426-557.000.
Rutledge, Raleigh N.: *See*—
Hahn, Granville J.; and Rutledge, Raleigh N., 4,469,651, Cl. 264-40.600.
Ryuto, Hirotaka: *See*—
Takeuchi, Tsutomu; Nishi, Mineo; Irie, Toshio; and Ryuto, Hirotaka, 4,469,882, Cl. 560-25.000.
Saalmueller, Karl-Heinz: *See*—
Kopp, Walter; and Saalmueller, Karl-Heinz, 4,469,427, Cl. 355-3.0DD.
Saarbergwerke AG: *See*—
Jorzyk, Sigurd; Meyer, Willy; and Splicthoff, Heinz, 4,468,923, Cl. 60-39.020.
Sabel, Garry J.: *See*—
Skover, Nick, Jr.; and Sabel, Garry J., 4,469,010, Cl. 91-408.000.
Sadler, Charlton. Fire escape device. 4,469,196, Cl. 182-236.000.
Saegusa, Nobuo: *See*—
Takahara, Michiyoshi; Saegusa, Nobuo; and Nishijima, Kazuyoshi, 4,468,978, Cl. 74-552.000.
Saeki, Tokuichi: *See*—
Sawa, Natsuo; and Saeki, Tokuichi, 4,469,622, Cl. 252-391.000.
Sagady, Calman S.: *See*—
Tuohig, Wayne D.; and Sagady, Calman S., 4,469,626, Cl. 252-514.000.
Saikatsu, Takeo: *See*—
Tsuchihashi, Michihiro; Anzai, Yoshinori; Kajiwara, Toshiro; and Saikatsu, Takeo, 4,469,986, Cl. 313-610.000.
St. Denis, John N.: *See*—
Woods, James W.; St. Denis, John N.; and Chapman, Dana A., 4,469,787, Cl. 435-7.000.
St. Lawrence Technologies Limited: *See*—
Assarsson, Per G.; and Nagasuye, Joseph H., 4,469,524, Cl. 127-1.000.
St. Regis Paper Company: *See*—
Kenan, Ralph H., 4,470,153, Cl. 383-100.000.
Saito, Masayoshi: *See*—
Fujisawa, Takao; Saito, Masayoshi; Yamada, Kohei; and Tsubouchi, Seiji, 4,469,953, Cl. 250-574.000.
Sakaguchi, Masashi: *See*—
Shingu, Hideo; Arai, Kozo; Sakaguchi, Masashi; Nishide, Toshio; Watanabe, Osamu; Tashiro, Yasushi; Otsuka, Ryotatsu; and Tsukamoto, Kenji, 4,469,512, Cl. 75-63.000.
Sakai, Yoshihito: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Sakaki, Tetsuro; and Yamanaka, Akira, to Victor Company of Japan, Limited. Apparatus for lifting and lowering a linear tracking tone arm in a record player. 4,470,130, Cl. 369-230.000.
Sakamoto, Masayoshi; and Kamata, Minoru, to Pioneer Electronic Corporation. Head base drive mechanism in tape player. 4,470,087, Cl. 360-105.000.
Sakamoto, Shuichi: *See*—
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Shitara, Tetsuo; and Sakamoto, Shuichi, 4,469,683, Cl. 424-180.000.
Sakamoto, Takeshi: *See*—
Anzai, Shunichi; and Sakamoto, Takeshi, 4,469,088, Cl. 126-436.000.
Sakurai, Yukio, to Nissan Motor Company, Limited. Automotive electric fan controlling device. 4,469,053, Cl. 123-41.120.
Salazar Guillen, Jose A.: *See*—
Galiasso Tailleur, Roberto E.; Salazar Guillen, Jose A.; Huskey, Donald; Morales, Alfredo L.; and Aquino, Luig G., 4,469,587, Cl. 208-61.000.
Salensky, George A., to Union Carbide Corporation. Corrosion inhibitive pigments. 4,469,521, Cl. 106-296.000.
Salewsky, Gert: *See*—
van den Boom, Johannes; Leitner, Wilfried; Salewsky, Gert; and Gassen, Hans-Peter, 4,469,316, Cl. 267-140.100.
Salvador, Victor L.: *See*—
LeVine, Donald J.; and Salvador, Victor L., 4,469,390, Cl. 339-95.00R.

Sambrook, Rodney M.; and Ross, Julian R. H., to Dyson Refractories Limited. Catalyst and method of preparation. 4,469,815, Cl. 502-303.000.

Samuelsson, Soren. Tool holders for use on louvers. 4,468,833, Cl. 15-245.000.

Sandel, Robert J.; and Ward, Samuel F., to Froude Engineering Ltd. Gear change actuators. 4,469,207, Cl. 192-3.580.

Sanderson, John R.; Watts, Lewis W., Jr.; Renken, Terry L.; and Vanderpool, Steven H., to Texaco Inc. Cycloalkane epoxides produced by air oxidation of cycloalkenes. 4,469,880, Cl. 549-532.000.

Sandoz Ltd.: *See*—
Grossmann, Hans, 4,469,485, Cl. 8-522.000.

Sanford, Charles L., to Beloit Corporation. Flow distributor. 4,469,556, Cl. 162-380.000.

Sannomiya, Kunio: *See*—
Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, 4,470,072, Cl. 358-260.000.

Sano, Reiji; Morita, Yasuyuki; Kawauchi, Yoshikazu; Kimura, Minoru; and Takahashi, Hidemi, to Matsushita Electric Industrial Company, Limited. Coaxial-type carbon dioxide gas laser oscillator. 4,470,144, Cl. 372-61.000.

Santa Barbara Research Center: *See*—
Kern, Mark T.; and Cinzori, Robert J., 4,469,944, Cl. 250-339.000.

Sanyo Electric Co., Ltd.: *See*—
Mashimo, Katsuyuki; Masuda, Teruo; Nakayama, Toshio; Hashimoto, Masuyuki; and Kanai, Takeshi, 4,468,934, Cl. 62-495.000.

Sapp, Gunter: *See*—
Krause, Rudolf; and Sapp, Gunter, 4,469,592, Cl. 209-322.000.

Saracino, Paolo, to NORD BITUMI di Marco Danese & C. s.a.s. Composite insulating article for making prefabricated coverings. 4,469,731, Cl. 428-68.000.

Sarin, Vinod K.; and Buljan, Sergej-Tomislav, to GTE Laboratories Incorporated. Coated composite modified silicon aluminum oxynitride cutting tools. 4,469,489, Cl. 51-295.000.

Sarkar, Nitis: *See*—
Snyder, Kenneth L., Jr.; Keskey, William H.; and Sarkar, Nitis, 4,469,611, Cl. 252-75.000.

Sarr, Dennis P., to Boeing Company, The. Integrated electro-optical position sensing, workpiece probing and display method and apparatus. 4,470,122, Cl. 364-559.000.

Sartain, Don M. Ladder safety attachment. 4,469,195, Cl. 182-206.000.

Sasaki, Nobuo, to Fujitsu Limited. Method of making aluminum gate self-aligned FET by selective beam annealing through reflective and antireflective coatings. 4,468,855, Cl. 29-576.00B.

Sasaki, Tohru; Terasaki, Syuuzi; and Susa, Tomoo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Dielectric films and process for preparing same. 4,469,747, Cl. 428-325.000.

Sasaya, Osamu: *See*—
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; and Tomita, Yoshifumi, 4,469,766, Cl. 430-23.000.

Sashida, Mitsuaki: *See*—
Matsui, Fumio; Sashida, Mitsuaki; Komaki, Toshihiro; and Yoshizawa, Atsushi, 4,469,424, Cl. 354-298.000.

Sato, Hideo: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,469,768, Cl. 430-58.000.
Kawamura, Kouichi; Sato, Hideo; and Katsuyama, Harumi, 4,469,864, Cl. 549-13.000.

Sato, Hiroshi: *See*—
Iioka, Isao; Yamagishi, Keiiti; Sato, Hiroshi; and Suganuma, Nobuo, 4,469,673, Cl. 424-50.000.

Sato, Tadao: *See*—
Endo, Tadashi; Fukunaga, Osamu; and Sato, Tadao, 4,469,802, Cl. 501-96.000.

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Yamane, Isao; Sato, Takeshi; Kudo, Toshio; Minamoto, Yoshiki; and Tachibana, Takehiko, 4,469,790, Cl. 435-68.000.

Satoh, Atsuyuki: *See*—
Tsuruoka, Takashi; Imai, Satoshi; Satoh, Atsuyuki; Watanabe, Tetsuro; Watanabe, Koji; Inouye, Shigeharu; and Niida, Taro, 4,469,643, Cl. 260-502.50G.

Satoh, Hiroaki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pipes made of polypropylene reinforced with carbon fibers. 4,469,138, Cl. 138-174.000.

Satoh, Susumu; Mogi, Kinichi; Murakami, Saburo; and Nakashima, Toshiaki, to SS Pharmaceutical Co., Ltd. 2,3-Butanediol diester derivatives, process for producing the same, and an antiulcer drug containing the same. 4,469,704, Cl. 424-312.000.

Sauer, Heinz; and Stichel, Willi, to Rasmussen GmbH. Clamp for hoses or the like. 4,468,840, Cl. 24-20.00R.

Saumell, Luis E.: *See*—
Hernandez, Walter; and Saumell, Luis E., 4,470,032, Cl. 335-288.000.

Saunders, Gerald, to Queen's University at Kingston. Pneumatic leg stiffener. 4,468,821, Cl. 3-18.000.

Sauter Feinmechanik GmbH: *See*—
Reusch, Walter; and Schips, Gunther, 4,468,991, Cl. 82-36.00A.

Sava Kranj Industrija gumijevih, usnjenih in kemicnih izdelkov n.l.sol.o.: *See*—
Munih, Pavel, 4,469,573, Cl. 204-155.000.

Savin Corporation: *See*—
Landa, Benzion, 4,469,461, Cl. 400-473.000.

Sawa, Natsuo; and Saeki, Tokuichi, to Shikoku Chemicals Corporation. Method for preventing rusting in silver by using novel imidazole-4(5)-dithiocarboxylic acids in organic solvent. 4,469,622, Cl. 252-391.000.

Sawairi, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Laminated capacitor. 4,470,099, Cl. 361-328.000.

Sawase, Takamichi: *See*—
Fujiwara, Yuji; Muramatsu, Shigeru; Mori, Mitsuhiko; and Sawase, Takamichi, 4,469,000, Cl. 84-115.000.

Sayles, James A.; and Norwood, William J., III, to Chevron Research Company. Gauge well float for floating roof storage tanks. 4,468,975, Cl. 73-863.810.

Scapa Inc.: *See*—
Albert, Hans, 4,469,221, Cl. 198-851.000.
Harwood, William J., 4,469,142, Cl. 139-383.00A.

Schaarschmidt, Joachim; and Deibel, Erwin, to Maag Gear-Wheel & Machine Co. Ltd. Gripper arrangement for a hoisting apparatus. 4,469,362, Cl. 294-116.000.

Schapel, Dietmar: *See*—
Heller, Harold; and Schapel, Dietmar, 4,469,502, Cl. 71-11.000.

Schauble, Werner, to Robert Bosch GmbH. Method and apparatus for measuring the mass of a pulsating medium flowing in a flow cross section. 4,468,963, Cl. 73-204.000.

Schaulin, Jean-Michel; Gantin, Robert; and Kanat, Yasar, to Werkzeugmaschinenfabrik Oerlikon-Buhrie AG. Marine firing weapon for fighting airborne targets, especially in zenith. 4,469,005, Cl. 89-33.140.

Schechter, Emanuel S. Glide path indicator for aircraft. 4,468,960, Cl. 73-178.00R.

Scheidel, Wolfgang: *See*—
Aschoff, Jorg; and Scheidel, Wolfgang, 4,469,166, Cl. 165-25.000.

Scherberich, Paul: *See*—
Drauz, Karlheinz; Kleemann, Axel; Martens, Jurgen; Scherberich, Paul; and Effenberger, Franz, 4,469,876, Cl. 548-535.000.

Schering Aktiengesellschaft: *See*—
Budinsky, Helmut; and Blasing, Horst, 4,469,526, Cl. 134-25.400.

Schering Corporation: *See*—
Zupon, Michael A.; Sequeira, Joel A.; Kirschner, Alan S.; and Yuen, Pui-Ho, 4,469,228, Cl. 206-568.000.

Schimek, DuWayne. Key interlocked parking brake safety assembly. 4,469,192, Cl. 180-287.000.

Schimmel, Karl F.: *See*—
Singer, Debra L.; Schimmel, Karl F.; Dowbenko, Rostyslaw; Chau, Michael M.; and Chang, Wen-Hsuan, 4,469,832, Cl. 524-160.000.

Schips, Gunther: *See*—
Reusch, Walter; and Schips, Gunther, 4,468,991, Cl. 82-36.00A.

Schirmer, Henry G.: *See*—
Oberle, Timothy T.; Schirmer, Henry G.; Bornstein, Norman D.; and Walters, Johnnie J., 4,469,742, Cl. 428-215.000.

Schirmer, Ulrich: *See*—
Reissenweber, Gernot; and Schirmer, Ulrich, 4,469,884, Cl. 560-160.000.

Schleimer, Francois: *See*—
Metz, Paul; Legille, Edouard; Schleimer, Francois; and Weiner, Antoine, 4,469,510, Cl. 75-51.000.

Schlicker, Heinrich A., to AB Volvo. Sealing device in a transmission with pressure-medium controlled, continuously variable gear ratio. 4,469,333, Cl. 277-12.000.

Schmalenbach, Erich: *See*—
Rastetter, Adolf; and Schmalenbach, Erich, 4,469,201, Cl. 188-67.000.

Schmidt, Donald L., to Dow Chemical Company, The. Perfluorocarbon based polymeric coatings having low critical surface tensions. 4,469,836, Cl. 524-376.000.

Schmidt, Friedrich H.: *See*—
Radtke, Wolfgang; Schmidt, Friedrich H.; Reuter, Fritz; Moog, Walter; and Borbely, Gyorgy, 4,468,908, Cl. 52-483.000.

Schmidt, Nicholas F.: *See*—
Shah, Nutan B.; and Schmidt, Nicholas F., 4,469,674, Cl. 424-52.000.

Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG: *See*—
Radtke, Wolfgang; Schmidt, Friedrich H.; Reuter, Fritz; Moog, Walter; and Borbely, Gyorgy, 4,468,908, Cl. 52-483.000.

Schmidt, Robert J., to UOP Inc. Process for the production of isopropyl alcohol. 4,469,903, Cl. 568-918.000.

Schmitt, Helmut; Schurig, Helmuth; and Strewe, Wolfgang, to Uhde GmbH. Membrane electrolysis cell. 4,469,577, Cl. 204-252.000.

Schmitt, Joseph J.: *See*—
Haskett, Thomas E.; and Schmitt, Joseph J., 4,469,654, Cl. 264-62.000.

Schmitt, Kirk D., to Mobil Oil Corporation. Pyrrolidinium methane sulfonates as surfactants in enhanced oil recovery. 4,469,607, Cl. 252-8.55D.

Schmitt, Peter C.: *See*—
Barnich, Richard G.; Braun, Thomas B.; Lawrence, Lloyd R.; and Schmitt, Peter C., 4,470,042, Cl. 340-721.000.

Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. Switching apparatus for absolute position measuring device. 4,469,940, Cl. 250-214.00R.

Schmitt, Walter, to Dr. Johannes Heidenhain GmbH. Electrical circuit for absolute position measuring device. 4,469,958, Cl. 307-246.000.

Schmitz, Anton: *See*—
Rasshofer, Werner; Thoma, Wilhelm; and Schmitz, Anton, 4,469,856, Cl. 528-45.000.

Schnabel, Wolfram: *See*—
Fischer, Karl-Heinz; Schnabel, Wolfram; and Serbent, Harry, 4,469,509, Cl. 75-36.000.

Schneider, Adalbert G.: *See*—
Petersson, Jan A. S.; Schneider, Adalbert G.; and Sjoberg, Lars G., 4,469,914, Cl. 174-52.00R.

Schneider, Manfred; Deubel, Reinhold; and Schunck, Rainer, to Hoechst Aktiengesellschaft. Pigment preparations; process for their manufacture and their use. 4,469,516, Cl. 106-23.000.

Schneider, Otto W., to Weller Company, The. Ice scraper. 4,468,831, Cl. 15-236.00R.

Schnitzler, Lorenz: *See*—
Jungwirth, Dieter; Schnitzler, Lorenz; Mannhart, Alto; and Wlodkowski, Johann, 4,469,756, Cl. 428-592.000.

Schrauf, Karl, to Seewer AG, Maschinenfabrik. Method for automatically feeding first products onto second products. 4,469,709, Cl. 426-231.000.

Schucker, Robert C.; and Wheelock, Kenneth S., to Exxon Research and Engineering Co. Process for the hydrogenation of aromatic hydrocarbons. 4,469,590, Cl. 208-143.000.

Schulte, Thomas L. Analgesic composition and use thereof to ameliorate deep and intractable pain. 4,469,702, Cl. 424-308.000.

Schumm, Brooke, Jr., to Union Carbide Corporation. Seal closure for a galvanic dry cell. 4,469,764, Cl. 429-86.000.

Schunck, Rainer: *See*—
Schneider, Manfred; Deubel, Reinhold; and Schunck, Rainer, 4,469,516, Cl. 106-23.000.

Schurig, Helmuth: *See*—
Schmitt, Helmut; Schurig, Helmuth; and Strewe, Wolfgang, 4,469,577, Cl. 204-252.000.

Schuster, Irving, to Rockwell International Corporation. Hydrodynamic ram attenuating fuel tank. 4,469,295, Cl. 244-135.00R.

Schwartz, Michael A.; and Yamagata, Toshio, to Press Machinery Corporation. Fluid dispensing apparatus such as spray dampener for printing press and method of dispensing. 4,469,024, Cl. 101-147.000.

Schwartz, Willi, to Dragerwerk Aktiengesellschaft. Pressure indicator particularly for respirators. 4,468,969, Cl. 73-744.000.

Schwarz, Annick: *See*—
Guillon, Claude R.; and Schwarz, Annick, 4,468,913, Cl. 53-440.000.

Schwarz, Gunther, to BASF Farben & Fasern AG. Metallized recording papers, and a process for their manufacture. 4,469,749, Cl. 428-403.000.

Schweer, Chris V.; and Smith, Jimmy B., to Peabody Development Company. Process for calcining and carbonizing petroleum coke. 4,469,557, Cl. 201-17.000.

Schwendemann, Kenneth L.: *See*—
Crow, Robert W.; Vinzant, Michael B.; and Schwendemann, Kenneth L., 4,469,179, Cl. 166-319.000.

Schwertfeger, Werner: *See*—
Millauer, Hans; Schwertfeger, Werner; and Siegemund, Gunter, 4,469,641, Cl. 260-458.00P.

Schwiecker, Horst; and Zoller, Alfons, to Leybold-Heraeus GmbH. Method of and photometric arrangement for measuring and controlling the thickness of optically effective coatings. 4,469,713, Cl. 427-10.000.

Scott, John J., to Norton Co. Magnetic recording materials. 4,469,758, Cl. 428-693.000.

Scott, William R., to United States of America, Navy. Single-side connected transducer. 4,469,976, Cl. 310-334.000.

Scott, Willie L.: *See*—
Coco, Eugene E.; and Scott, Willie L., 4,469,951, Cl. 250-494.100.

Seal, Henry A.: *See*—
Edgerton, Gene A.; Engel, John H.; Ottsen, Henning; Seal, Henry A.; and Wadsworth, Joseph F., 4,469,392, Cl. 339-117.00R.

Seal, J. David, to Autotrol Corporation. Microcomputer controlled demand/scheduled water softener having automatic resin bed sensing. 4,469,602, Cl. 210-662.000.

Sealed Air Corporation: *See*—
Sperry, Charles R.; and Bladyka, Paul J., 4,469,251, Cl. 222-135.000.

Sealtran Corporation: *See*—
Anarwala, Mushtaq, 4,469,353, Cl. 283-74.000.

Sears, Lawrence M. Piezoelectric apparatus for sensing movement of a moving element such as a dial arm of a utility meter. 4,470,010, Cl. 324-157.000.

Seddon, Robert M., to Unitex Limited. Foam sandwich construction. 4,469,733, Cl. 428-109.000.

Seewer AG, Maschinenfabrik: *See*—
Schrauf, Karl, 4,469,709, Cl. 426-231.000.

Segal, Leon; and Testa, Anthony, to Allied Corporation. Lamination of highly reinforced thermoplastic composites. 4,469,543, Cl. 156-283.000.

Segawa, Hirohisa: *See*—
Mizuno, Masanori; Segawa, Hirohisa; and Mizuno, Takaji, 4,469,933, Cl. 219-130.210.

Seikosha Co., Ltd.: *See*—
Chida, Yoshinori; and Tada, Satoru, 4,469,457, Cl. 400-208.000.
Hayashi, Mikio, 4,469,023, Cl. 101-93.480.

Seiler, Wolfgang, to Oskar Schleicher, Firma. Double lift open shed Jacquard loom. 4,469,139, Cl. 139-65.000.

Seiler, Wolfgang, to Oskar Schleicher, Firma. Double-lift open-shed Jacquard loom. 4,469,140, Cl. 139-65.000.

Seitz, Alan F., to Data Motion, Inc. Paper feed tractor with compensating drive pulley. 4,469,263, Cl. 226-74.000.

Seitz, Karl G., to Data Motion, Inc. Paper feed tractor with compensating drive pulley. 4,469,262, Cl. 226-74.000.

Seki, Kenji: *See*—
Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,469,771, Cl. 430-126.000.

Seki, Masayuki, to Nisshin Kogyo Kabushiki Kaisha. Negative pressure type booster arrangement. 4,469,008, Cl. 91-376.00R.

Sekich, Nick, Jr.: *See*—
Evezich, Paul D., 4,469,250, Cl. 222-83.500.

Sekiguchi, Haruo; Tagawa, Kimiteru; Ohshima, Kazushi; and Fukuda, Nobuhiro, to Mitsui Toatsu Chemicals, Incorporated. Production process of ferromagnetic iron powder. 4,469,506, Cl. 75-0.5AA.

Sekiguchi, Haruo; Sudoh, Kazufuyu; Kobayashi, Sadao; and Fukuda, Nobuhiro, to Mitsui Toatsu Chemicals, Incorporated. Production process of ferromagnetic iron powder. 4,469,507, Cl. 75-0.5AA.

Selman, Gordon L.: *See*—
Stephenson, David J.; Heywood, Alan E.; and Selman, Gordon L., 4,469,666, Cl. 423-376.000.

Seltzer, Edward, to Rutgers Research & Educational Foundation. Process for making quick-cooking pasta. 4,469,711, Cl. 426-557.000.

Semco Instruments, Inc.: *See*—
Moore, M. Samuel, 4,468,924, Cl. 60-39.281.

Semedard, Jean-Claude: *See*—
Marsault, Jean-Jacques; Semedard, Jean-Claude; and Peyrelongue, Jean-Pierre, 4,469,236, Cl. 220-1.500.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei, 4,470,060, Cl. 357-41.000.

Sequeira, Joel A.: *See*—
Zupon, Michael A.; Sequeira, Joel A.; Kirschner, Alan S.; and Yuen, Pui-Ho, 4,469,228, Cl. 206-568.000.

Serbent, Harry: *See*—
Fischer, Karl-Heinz; Schnabel, Wolfram; and Serbent, Harry, 4,469,509, Cl. 75-36.000.

Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.; Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I. Grid-like electrode for electronic components and process for making same. 4,469,984, Cl. 313-348.000.

Serino, Robert M.: *See*—
Keehn, Philip M.; and Serino, Robert M., 4,469,574, Cl. 204-159.00R.

Setty, Thomas J.: *See*—
Mitchell, Gerald L.; Woerz, Stephen E.; and Setty, Thomas J., 4,469,547, Cl. 156-423.000.

Seyler, Jay K.: *See*—
Orlowski, Ronald C.; and Seyler, Jay K., 4,469,632, Cl. 260-112.50T.

SGS-Ates Componenti Elettronici S.p.A.: *See*—
Cerofolini, Gianfranco, 4,468,852, Cl. 29-571.000.

Shachaf, Yitzik. Apparatus for making internally threaded lock nuts. 4,468,827, Cl. 10-72.00R.

Shafer, David R., to Perkin-Elmer Corporation, The. Restrictive off-axis field optical system. 4,469,414, Cl. 350-444.000.

Shaffer, Douglas E.: *See*—
Beattie, Patrick J.; Shaffer, Douglas E.; and Sylvester, Richard J., 4,468,943, Cl. 70-302.000.

Shah, Dinesh O.; Adiga, K. C.; and SunderRam, A. N., to University of Florida. Stable blend of coal and diesel oil. 4,469,486, Cl. 44-51.000.

Shah, Nutan B.; and Schmidt, Nicholas F., to Richardson-Vicks Inc. Stable oral compositions containing zinc and fluoride compounds. 4,469,674, Cl. 424-52.000.

Shapenko, Valentina N.: *See*—
Perevodchikov, Vladimir I.; Akimov, Pavel I.; Skibityansky, David A.; Shapenko, Valentina N.; Loginov, Lev V.; Shapiro, Alexandr L.; Yakovlev, Arkady N.; and Kosmachevsky, Vitaly M., 4,469,982, Cl. 313-293.000.

Shapiro, Alexandr L.: *See*—
Perevodchikov, Vladimir I.; Akimov, Pavel I.; Skibityansky, David A.; Shapenko, Valentina N.; Loginov, Lev V.; Shapiro, Alexandr L.; Yakovlev, Arkady N.; and Kosmachevsky, Vitaly M., 4,469,982, Cl. 313-293.000.

Sharma, Satish C., to General Tire & Rubber Company, The. Adhesion of aramid cords to rubber. 4,469,748, Cl. 428-378.000.

Sharp, Gordon P.: *See*—
Curtiss, William P.; and Sharp, Gordon P., 4,469,997, Cl. 318-729.000.

Sharp Kabushiki Kaisha: *See*—
Ikesue, Isao, 4,469,410, Cl. 350-343.000.
Kato, Hiroaki; Kishi, Kohhei; and Takafuji, Yutaka, 4,469,568, Cl. 204-35.100.
Komuro, Yoneo, 4,469,926, Cl. 219-10.55B.

Sharpless, Edward N.; and Lichtenstein, Joseph, to Whitman Medical Corporation. Indicator system and means for irreversibly recording a temperature limit. 4,469,452, Cl. 374-160.000.

Shatalov, Stanislav M.: *See*—
Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.; Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I., 4,469,984, Cl. 313-348.000.

Shaw, Herbert J.; Chodorow, Marvin; and Stokes, Loren F., to Leland Stanford Junior University, Board of Trustees of the. Fiber optic resonator. 4,469,397, Cl. 350-96.150.

Shearer, Wilfred L.; Sinker, Stephen M.; and Wolf, Richard A., to Celanese Corporation. Poly(butylene terephthalate) based molding resins. 4,469,834, Cl. 524-193.000.

Shechter, Leon: *See*—
Munteanu, Marina A.; Oltarzewski, Edward S.; Shechter, Leon; and Warren, Craig B., 4,469,613, Cl. 252-92.000.

Shell Oil Company: *See*—
Gaaf, Jan; and van Santen, Rutger A., 4,469,813, Cl. 502-263.000.
Johnson, Thomas H., 4,469,804, Cl. 502-32.000.
Lucien, Jacques P., 4,469,811, Cl. 502-227.000.

Shelley, Edwin F. Time synchronized data transmission system. 4,469,917, Cl. 179-2.0DP.

Sherwin, Martin B.: *See—*
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,469,904, Cl. 568-948.000.

Shibata, Kunio; Kanamura, Tomotsugu; and Nakamura, Tunehiko, to Mitsubishi Rayon Co., Ltd. Air nozzle for producing fancy yarn. 4,468,921, Cl. 57-333.000.

Shikoku Chemicals Corporation: *See—*
Sawa, Natsuo; and Saeki, Tokuichi, 4,469,622, Cl. 252-391.000.

Shimamune, Takayuki: *See—*
Asano, Hiroshi; Shimamune, Takayuki; and Nitta, Hideo, 4,469,581, Cl. 204-290.00F.

Shimanaka, Hiroshi: *See—*
Inokuti, Yukio; Ito, Yo; and Shimanaka, Hiroshi, 4,469,533, Cl. 148-111.000.

Shimizu, Akira: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,469,323, Cl. 271-288.000.

Shimizu, Isamu: *See—*
Inoue, Eiichi; and Shimizu, Isamu, 4,469,985, Cl. 313-366.000.

Shimizu, Kazuo: *See—*
Hashimoto, Yasuyuki; and Shimizu, Kazuo, 4,469,462, Cl. 401-107.000.

Shimosaka, Satoru: *See—*
Koike, Masaru; Hasegawa, Yasumasa; Shimosaka, Satoru; Aoyama, Nagara; and Yoshizumi, Toshihiko, 4,469,154, Cl. 144-2.00R.

Shine, John: *See—*
Baxter, John D.; Fettes, Ivy; and Shine, John, 4,469,631, Cl. 260-112.50E.

Shinga, Hideo; Arai, Kozo; Sakaguchi, Masashi; Nishide, Toshio; Watanabe, Osamu; Tashiro, Yasushi; Otsuka, Ryotatsu; and Tsukamoto, Kenji, to Showa Aluminum Corporation. Process for producing high-purity aluminum. 4,469,512, Cl. 75-63.000.

Shinohara, Shoji: *See—*
Konda, Koichi; and Shinohara, Shoji, 4,469,312, Cl. 266-99.000.

Shinozaki, Toshiaki: *See—*
Mori, Ichiro; Sugihara, Kazuyoshi; Shinozaki, Toshiaki; and Tojo, Toru, 4,469,949, Cl. 250-491.100.

Shinzato, Toru: *See—*
Ishihara, Toshikazu; Kitano, Tomoyuki; Maeda, Kenji; and Shinzato, Toru, 4,469,593, Cl. 210-96.200.

Shiokama, Yoshiharu: *See—*
Kimura, Makoto; Tomino, Naoki; Magariyama, Kenichi; and Shiokama, Yoshiharu, 4,469,422, Cl. 354-286.000.

Shioya, Kiyohiko. High emissivity refractory coating, process for manufacturing the same, and coating composition therefor. 4,469,721, Cl. 427-397.800.

Shioya, Shigeharu: *See—*
Shirahata, Isao; Nakamura, Nobuyuki; Shioya, Shigeharu; and Hori, Hisako, 4,469,718, Cl. 427-120.000.

Shipman Manufacturing Co., Inc.: *See—*
Shipman, Robert V., Sr., 4,469,211, Cl. 194-1.00G.

Shipman, Robert V., Sr., to Shipman Manufacturing Co., Inc. Coin mechanism for vending machine. 4,469,211, Cl. 194-1.00G.

Shirahata, Isao; Nakamura, Nobuyuki; Shioya, Shigeharu; and Hori, Hisako, to Furukawa Electric Co., Ltd., The. Process for manufacturing polyester resin insulated wires. 4,469,718, Cl. 427-120.000.

Shirato, Kozo: *See—*
Hiraizumi, Kazuo; Shirato, Kozo; and Kawashima, Kazuyasu, 4,469,495, Cl. 55-189.000.

Shirayanagi, Moriyasu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Aspherical lens for indirect ophthalmoscope. 4,469,413, Cl. 350-432.000.

Shitara, Tetsuo: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Shitara, Tetsuo; and Sakamoto, Shuichi, 4,469,683, Cl. 424-180.000.

Short, Robert D., III, to Sperry Corporation. Range profile target classifier. 4,470,048, Cl. 343-5.0SA.

Shoults, Richard W.: *See—*
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Siegemund, Gunter: *See—*
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Donig, Gerhard, 4,470,095, Cl. 361-153.000.
Heinle, Georg, 4,470,000, Cl. 318-805.000.
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Kruger, Hans; and Rubner, Roland, 4,469,408, Cl. 350-340.000.
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Rosen, Hans-Georg; and Wittmann, Julius, 4,469,929, Cl. 219-121.0LD.
Umkehrer, Walter, 4,469,963, Cl. 307-477.000.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Low, Martin, 4,469,545, Cl. 156-359.000.

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Brown, Forest G., 4,469,473, Cl. 417-571.000.

Sign-up Corporation: *See—*
Stoudt, Theodore L., 4,469,302, Cl. 248-512.000.

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Tiletschke, Lothar; and Feldmann, Hellmuth, 4,468,907, Cl. 52-333.000.

Signorelli, Gary J. Surface grinder attachment. 4,468,895, Cl. 51-168.000.

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Simmonds Precision Products, Inc.: *See—*
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Simpson, Victor J. Cultivating tool with telescopically slidable anchor legs. 4,469,184, Cl. 172-41.000.

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Singer, Debra L.; Schimmel, Karl F.; Dowbenko, Rostyslaw; Chou, Michael M.; and Chang, Wen-Hsuan, to PPG Industries, Inc. Aminoplast curable coating compositions containing polycyclic esters of sulfonic acids as latent acid catalysts. 4,469,832, Cl. 524-160.000.

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Petersson, Jan A. S.; Schneider, Adalbert G.; and Sjoberg, Lars G., 4,469,914, Cl. 174-52.00R.

Sjostrom, Stig; and Thornqvist, Allan, to Meyn Machinenfabriek, B.V. Bird cutting plant. 4,468,838, Cl. 17-11.000.

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Skover, Nick, Jr.; and Sabel, Garry J., to Applied Power Inc. Motion dampening seat suspension system. 4,469,010, Cl. 91-408.000.

Slaats, Mathew A.; Henriott, Jay M.; Hedinger, Paul R.; and Trinkel, Steven F., to Kimball International, Inc. Desk locking mechanism. 4,469,382, Cl. 312-219.000.

Slama, Gerard J. Device for causing a pinprick to obtain and to test a drop of blood. 4,469,110, Cl. 128-770.000.

Slanetz, Charles A., Jr. Tactile control device for a remote sensing device. 4,469,091, Cl. 128-6.000.
Slavic, Fred M. Work piece guide for table saws and the like. 4,469,318, Cl. 269-91.000.
Slidex Corporation: *See*—
Ozeki, Jiro, 4,468,873, Cl. 40-361.000.
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Smith, Jimmy B.: *See*—
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Smith, Lawrence E.: *See*—
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Smith, Leroy D., to Weyerhaeuser Company. Self-unlocking container closure. 4,469,273, Cl. 229-43.000.
Smith, Morley L., to T. S. Simms & Co. Limited. Paint brushes. 4,469,223, Cl. 206-209.000.
Smith & Nephew Associated Companies p.l.c.: *See*—
Potter, William D., 4,469,477, Cl. 433-168.000.
SmithKline Beckman Corporation: *See*—
Ackerman, Dennis M.; Berkowitz, Barry A.; and Wiebelhaus, Virgil D., 4,469,690, Cl. 424-244.000.
DeMarinis, Robert M., 4,469,634, Cl. 260-239.0BB.
Huffman, William F.; and Moore, Michael L., 4,469,679, Cl. 424-177.000.
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Snyder, David E.; and Hiller, Don, to Axelson, Inc. Pilot valve with fusible lockout knob. 4,469,119, Cl. 137-72.000.
Snyder, David E., to Hughes Aircraft Company. High-speed MESFET circuits using depletion mode MESFET signal transmission gates. 4,469,962, Cl. 307-450.000.
Snyder, Kenneth L., Jr.; Keskey, William H.; and Sarkar, Nitis, to Dow Chemical Company, The. Water-based hydraulic fluids. 4,469,611, Cl. 252-75.000.
Snyder, Robert K., to Rosemount Inc. Vibration isolation apparatus. 4,469,303, Cl. 248-634.000.
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Societe Anonyme de Telecommunications: *See*—
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Societe Chimique des Charbonnages-CDF Chimie: *See*—
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Societe Chimiques des Charbonnages: *See*—
Roussel, Robert, 4,469,847, Cl. 525-89.000.
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Philippossian, Georges; and Enslen, Marc, 4,469,698, Cl. 424-253.000.
Societe dite: Automobiles Citroen: *See*—
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Condet, Claude, 4,469,340, Cl. 280-5.00A.
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Lecron, Jacques; Manera, Maxime; Faure, Jean-Paul; and Renaudin, Jean-Pierre, 4,469,499, Cl. 65-1.000.
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Rivadeneyra, Ricky R., 4,469,096, Cl. 128-133.000.
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Solum, James R. Well gravel packing method. 4,469,178, Cl. 166-278.000.
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Ohno, Katsutoshi; Abe, Tomohiko; Hoshina, Teruhiko, deceased; Hoshina, Ikuko, heir; Hoshina, Aya, heir; and Hoshina, Kensuke, heir, 4,469,619, Cl. 252-301.40R.
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Sorko-Ram, Paul O. Lightweight, low cost radiant energy collector and method for making same. 4,469,089, Cl. 126-438.000.
Sorrells, Frank D., to Cole National Corporation. Lens processing apparatus. 4,468,896, Cl. 51-217.00L.
Sorrentino, Cecelia M.; Pellet, Regis J.; and Bertolacini, Ralph J., to Standard Oil Company (Indiana). Reforming catalyst containing a group VIII noble metal, a group VIII non-noble metal, and gallium on separate support particles. 4,469,812, Cl. 502-230.000.
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Speer, Spencer J., to General Dynamics. Method and apparatus for mixing, casting and dispensing friction-sensitive pyrotechnic materials. 4,469,647, Cl. 264-3.00C.
Speer, Stephen R.; Evans, Hugh G.; and Christy, James S. Aircraft engine-turbocharger package with bleed valve control. 4,469,078, Cl. 123-564.000.
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Speranza, Donald, to Eaton Corporation. Low power acoustic fuel injector drive circuit. 4,469,974, Cl. 310-316.000.
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Chi, Chao S., 4,470,081, Cl. 360-43.000.
Short, Robert D., III, 4,470,048, Cl. 343-5.0SA.
Spevack, Jerome S. Integrated system for pollution abatement and energy derivation from geothermal steam. 4,469,668, Cl. 423-573.00R.
Spiegelberg, Karl; Hoffmann, Herbert; Jeske, Helmfried; Kolm, Alexander; and Ebeling, Fred, to VEB Edelstahlwerk. Plasma burner operated by means of gaseous mixtures. 4,469,932, Cl. 219-121.0PA.
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Spiral Systems, Inc.: *See*—
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SS Pharmaceutical Co., Ltd.: *See*—
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Staib, William G., to Southwire Company. Molten copper oxygenation. 4,469,513, Cl. 75-76.000.
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Standard Oil Company (Indiana): *See*—
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Standard Products Company, The: *See*—
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Stanley, Kerry G.; and Ho, Winston, to McNeilab, Inc. Saturated leukotriene derivatives as antiallergens. 4,469,705, Cl. 424-312.000.
Stapleton, Craig A.; Rasor, William; and Cronce, Gary, to Masco Corporation. Article carrier with adjustably positionable bracket. 4,469,261, Cl. 224-321.000.

Stapp, Paul R.; and Pardue, Jerry E., to Phillips Petroleum Company. Sulfonated phenolic material and its use in post primary oil recovery. 4,469,604, Cl. 252-8.55D.
Stark, Herbert H.: *See*—
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Statek Corporation: *See*—
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Stauffer, Randy C.: *See*—
Davis, Ralph A.; and Stauffer, Randy C., 4,469,617, Cl. 252-186.210.
Staver, Peter J., to Meyering, Clinton. Medical electrode apparatus and kit of components therefor. 4,469,105, Cl. 128-643.000.
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Stephenson, David J.; Heywood, Alan E.; and Selman, Gordon L., to Johnson Matthey & Co., Limited. Catalyst units for producing hydrocyanic acid. 4,469,666, Cl. 423-376.000.
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Sternberg, Joseph E. Bowling shoe. 4,468,870, Cl. 36-130.000.
Stevens, David; and Anderson, Hugh, to B.K.S. Surveys Limited. Surveying method and apparatus. 4,469,418, Cl. 354-63.000.
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Stimmelmayr, Anton: *See*—
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Stockburger, Hermann; and Winderlich, Hans-Georg. Method of securing data. 4,469,937, Cl. 235-435.000.
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Strewe, Wolfgang: *See*—
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Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals, Inc. 3-(4-Piperidinium)-1,2-benzisoxazoles. 4,469,869, Cl. 546-198.000.
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Sublette, Kerry L.; and Prestridge, Floyd L., to Combustion Engineering, Inc. Electrically enhanced inclined plate separator. 4,469,582, Cl. 204-302.000.
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Suita, Gwynn H., to Environmental Research Institute of Michigan. Infrared color photographic film. 4,469,779, Cl. 430-363.000.
Sulzer Brothers Limited: *See*—
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Sumitomo Chemical Company, Limited: *See*—
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Ichidate, Minoru; and Kubo, Toshihiko, 4,469,313, Cl. 266-207.000.
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Carlick, Daniel J.; and Wasilewski, Olgierd, 4,469,826, Cl. 523-339.000.
Sun-Maid Growers of California: *See*—
Coyle, William E.; Gunnerson, Robert E.; and Shoults, Richard W., 4,469,591, Cl. 209-170.000.
Sun, Shan C.; and DelCoco, Robert J., to Westinghouse Electric Corp. Productive relay apparatus for protection from sub-synchronous current oscillations in a power system. 4,470,091, Cl. 361-20.000.
Sun Tech, Inc.: *See*—
Finkel, Lawrence H., 4,469,491, Cl. 55-29.000.
Hsu, Chao-Yang; and Lyons, James E., 4,469,883, Cl. 560-131.000.
Sunderland, Richard A.: *See*—
Sorensen, Jay R.; and Sunderland, Richard A., 4,470,043, Cl. 340-722.000.
SunderRam, A. N.: *See*—
Shah, Dinesh O.; Adiga, K. C.; and SunderRam, A. N., 4,469,486, Cl. 44-51.000.
Susa, Tomoo: *See*—
Sasaki, Tohru; Terasaki, Syuuzi; and Susa, Tomoo, 4,469,747, Cl. 428-325.000.
Sutherland, James F.; and Cook, Henry F., to Westinghouse Electric Corp. Efficient computer input system for sensing status of high voltage contacts. 4,470,041, Cl. 340-644.000.
Suyama, Syuji: *See*—
Komai, Takeshi; Izumi, Toshihiro; and Suyama, Syuji, 4,469,862, Cl. 528-271.000.
Suyderhoud, Henri G.: *See*—
Yatsuzuka, Yohtaro; and Suyderhoud, Henri G., 4,470,146, Cl. 375-30.000.
Suzaki, Tomohiko: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Suzukamo, Gohfu: *See*—
Hamada, Kazuhiko; and Suzukamo, Gohfu, 4,469,894, Cl. 568-437.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Sugiura, Yasuyuki; and Nakama, Kazuo, 4,469,063, Cl. 123-308.000.
Suzuki, Kohkichi: *See*—
Akazawa, Toshitada; Suzuki, Kohkichi; and Haga, Toshikatu, 4,469,576, Cl. 204-237.000.
Suzuki, Koji: *See*—
Takayanagi, Yoshiaki; Suzuki, Koji; Nagashima, Nao; Ogawa, Hiroshi; Kuroda, Kouki; and Nagahira, Joyji, 4,470,009, Cl. 324-72.000.

Suzuki, Masahiko: *See*—
Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Horiuchi, Yasuhiro, 4,469,068, Cl. 123-447.000.
Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Kawai, Shizuo, 4,469,069, Cl. 123-447.000.
Suzuki, Masahiro: *See*—
Watanabe, Shigetaka; Suzuki, Masahiro; and Matsuga, Yoshiaki, 4,469,729, Cl. 428-36.000.
Suzuki, Satoshi, to Hitachi, Ltd. Altitude responsive turbocharger control system. 4,468,928, Cl. 60-602.000.
Suzuki, Teruo; Kobayashi, Tsuneki; and Miyasaka, Masao, to Hitachi Koki Co., Ltd. Tractor apparatus for feeding paper. 4,469,264, Cl. 226-74.000.
Sverdlik, David: *See*—
Fish, Leonard A.; and Sverdlik, David, 4,469,245, Cl. 221-225.000.
Swanson, Douglas L.; and Turk, Ronald K., to Swanson Systems, Inc. Programmable multiple position machine. 4,469,993, Cl. 318-561.000.
Swanson Systems, Inc.: *See*—
Swanson, Douglas L.; and Turk, Ronald K., 4,469,993, Cl. 318-561.000.
Swenson, Kenneth S., to Eaton Corporation. Regenerative drive control. 4,469,999, Cl. 318-798.000.
Swessel, John A., Jr.: *See*—
Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., 4,470,027, Cl. 335-16.000.
Sylvester, Richard J.: *See*—
Beattie, Patrick J.; Shaffer, Douglas E.; and Sylvester, Richard J., 4,468,943, Cl. 70-302.000.
T. S. Simms & Co. Limited: *See*—
Smith, Morley L., 4,469,223, Cl. 206-209.000.
Tachibana, Takehiko: *See*—
Yamane, Isao; Sato, Takeshi; Kudo, Toshio; Minamoto, Yoshiki; and Tachibana, Takehiko, 4,469,790, Cl. 435-68.000.
Tada, Satoru: *See*—
Chida, Yoshinori; and Tada, Satoru, 4,469,457, Cl. 400-208.000.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Ichikawa, Akira; Kitasei, Yasuzi; and Hidaka, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Method of adjusting the zero-point of rate type sensor. 4,470,124, Cl. 364-571.000.
Tagawa, Kimiteru: *See*—
Sekiguchi, Haruo; Tagawa, Kimiteru; Ohshima, Kazushi; and Fukuda, Nobuhiro, 4,469,506, Cl. 75-0.5AA.
Tago, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for rotatably supporting a recording member. 4,470,137, Cl. 369-100.000.
Taira, Akio, to Olympus Optical Co., Ltd. Image posture converting optical system. 4,469,404, Cl. 350-286.000.
Tajima, Akira; and Ikemori, Keiji, to Canon Kabushiki Kaisha. Wide angle zoom lens. 4,469,412, Cl. 350-426.000.
Takada, Masami, to Nippon Electric Co., Ltd. Multi-direction time division multiplex communication system. 4,470,141, Cl. 370-104.000.
Takafuji, Yutaka: *See*—
Kato, Hiroaki; Kishi, Kohhei; and Takafuji, Yutaka, 4,469,568, Cl. 204-35.100.
Takahara, Michiyoshi; Saegusa, Nobuo; and Nishijima, Kazuyoshi, to Nissan Motor Company, Limited. Steering wheel with a resin core. 4,468,978, Cl. 74-552.000.
Takahashi, Hidemi: *See*—
Sano, Reiji; Morita, Yasuyuki; Kawauchi, Yoshikazu; Kimura, Minoru; and Takahashi, Hidemi, 4,470,144, Cl. 372-61.000.
Takahashi, Hideyuki; and Kenmotsu, Isami, to Pioneer Electronic Corporation. Automatic record disc loading players. 4,470,136, Cl. 369-77.100.
Takahashi, Hiroshi, to Canon Kabushiki Kaisha. Input device for electronic apparatus. 4,470,037, Cl. 340-365.00R.
Takahashi, Kenji, to Sony Corporation. Tape cassette cases with locking mechanism. 4,469,225, Cl. 206-387.000.
Takahashi, Masayuki: *See*—
Minagawa, Motonobu; Haruna, Tohru; and Takahashi, Masayuki, 4,469,828, Cl. 524-100.000.
Takahashi, Takahiko: *See*—
Kuroda, Shigeo; Takahashi, Takahiko; and Anzai, Akio, 4,469,535, Cl. 148-187.000.
Takahashi, Toshio, to Fuji Tool & Die Co., Ltd. Three-dimensional laser cutting system by a playback method. 4,469,930, Cl. 219-121.0LN.
Takahashi, Tsuneo: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; Ichikawa, Akira; Kitasei, Yasuzi; and Hidaka, Akira, 4,470,124, Cl. 364-571.000.
Takahashi, Yoshinobu: *See*—
Tokushima, Yasuo; Takahashi, Yoshinobu; and Fukuta, Kenji, 4,469,531, Cl. 148-6.15R.
Takao, Mitsunori; and Kinugawa, Masumi, to Nippondenso Co., Ltd. Electronic control for internal combustion engine. 4,469,074, Cl. 123-492.000.
Takashima, Hiroaki: *See*—
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, 4,469,667, Cl. 423-447.100.
Takashima, Masaru; Matsuyama, Shigeru; Hayashi, Yoshihiro; Ito, Hisaji; Fujita, Kotaro; Inai, Kenji; and Takemoto, Shoji, to Aikoh Co., Ltd. Core for blow-forming the lining of vessel for molten metal, a lining method using said core, and a lining composition used in said lining method. 4,469,309, Cl. 266-44.000.
Takayama, Toshio; Ando, Hiromi; and Endou, Mitsuhiro, to Tokico Ltd. Pneumatic booster. 4,469,009, Cl. 91-376.00R.
Takayanagi, Yoshiaki; Suzuki, Koji; Nagashima, Nao; Ogawa, Hiroshi; Kuroda, Kouki; and Nagahira, Joyji, to Canon Kabushiki Kaisha. Surface potentiometer. 4,470,009, Cl. 324-72.000.
Takeda, Tooru; Hayakawa, Masakatsu; and Inoue, Yasuo, to NGK Spark Plug Co., Ltd. Die. 4,468,947, Cl. 72-467.000.
Takematsu, Yoshiyuki, to Fuji Koeki Corporation, a part interest. Electric flash apparatus. 4,469,989, Cl. 315-241.00P.
Takemoto, Shoji: *See*—
Takashima, Masaru; Matsuyama, Shigeru; Hayashi, Yoshihiro; Ito, Hisaji; Fujita, Kotaro; Inai, Kenji; and Takemoto, Shoji, 4,469,309, Cl. 266-44.000.
Takeshita, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Control system for an automatic transmission testing device. 4,468,958, Cl. 73-118.000.
Takeuchi, Osamu; and Aizawa, Akira, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Metal heating furnace. 4,469,314, Cl. 266-252.000.
Takeuchi, Tsutomu; Nishi, Mineo; Irie, Toshio; and Ryuto, Hirotaka, to Mitsubishi Chemical Industries Limited. Process for the production of aromatic carbamates. 4,469,882, Cl. 560-25.000.
Tamamura, Sadao: *See*—
Kojima, Yasuhiko; Konno, Seishi; Tamamura, Sadao; and Hashimoto, Takashi, 4,469,685, Cl. 424-195.000.
Tamiya, Katsunori: *See*—
Kimoto, Yasuo; Yamamoto, Masahiko; Tamiya, Katsunori; Sakai, Yoshihito; Komura, Akio; Honda, Shoichi; Maehata, Hidehiko; Kamada, Hiroshi; Suzaki, Tomohiko; and Inoue, Tomoya, 4,469,572, Cl. 204-129.460.
Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, to Matsushita Electric Industrial Co.; and Matsushita Graphic Communications Systems, Inc. Method of band compression. 4,470,072, Cl. 358-260.000.
Tanaka, Masaru; Noguchi, Naoki; and Ishida, Kozo, to Horiba, Ltd. Fluorescent gas analyzer. 4,469,946, Cl. 250-373.000.
Tanaka, Shigeo; Onodera, Kaoru; and Fujimori, Noboru, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 4,469,785, Cl. 430-572.000.
Tanaka, Tadanori: *See*—
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Tanaka, Takeo: *See*—
Itoh, Masaaki; Tanaka, Takeo; Hayashi, Masakatsu; Kudo, Mituo; and Tomita, Akira, 4,469,167, Cl. 165-151.000.
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Tanaka, Yasushi: *See*—
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Tandy Corporation: *See*—
Nakamura, Keiichi; and Horiuchi, Hideyuki, 4,469,919, Cl. 179-6.060.
Tang, David Y.; Cotter, Byron R.; and Goetz, Frederick J., to Occidental Chemical Corporation. Method for the preparation of nitrodiphenyl ethers. 4,469,893, Cl. 568-424.000.
Tanimoto, Kazuo, to Fujitsu Limited. Memory circuit having a decoder. 4,470,133, Cl. 365-227.000.
Tanno, Seikichi: *See*—
Nakano, Fumio; Iwasaki, Kishiro; and Tanno, Seikichi, 4,469,409, Cl. 350-341.000.
Tarumi, Noriyoshi: *See*—
Okamoto, Yukio; Tarumi, Noriyoshi; and Ashida, Hisashi, 4,469,429, Cl. 355-3.0DD.
Tasaka, Iehito: *See*—
Tsuruoka, Setsuo; Tasaka, Iehito; Kawamura, Yuji; Kimata, Shizuo; and Wabiko, Tatsuki, 4,469,615, Cl. 252-180.000.
Tashiro, Yasushi: *See*—
Shingu, Hideo; Arai, Kozo; Sakaguchi, Masashi; Nishide, Toshio; Watanabe, Osamu; Tashiro, Yasushi; Otsuka, Ryotatsu; and Tsukamoto, Kenji, 4,469,512, Cl. 75-63.000.
Taulman, Noel W. Energy-saving closure for foundation vents. 4,469,018, Cl. 98-37.000.
Taylor, Norman J.; and Petric, Paul F., to Varian Associates, Inc. Charged particle beam exposure system utilizing variable line scan. 4,469,950, Cl. 250-492.200.
Techno Venture Co., Ltd.: *See*—
Inagaki, Makoto, 4,468,865, Cl. 34-1.000.
Teijin Seiki Company Limited: *See*—
Nakajo, Jiro; and Naito, Shunzo, 4,468,919, Cl. 57-22.000.
Teknetics, Inc.: *See*—
Hirschi, Richard E.; and Payne, George C., 4,470,015, Cl. 324-329.000.
Telefonaktiebolaget L M Ericsson: *See*—
Petersson, Jan A. S.; Schneider, Adalbert G.; and Sjoberg, Lars G., 4,469,914, Cl. 174-52.00R.
Teletype Corporation: *See*—
Christian, Raymond R.; and Zuercher, Joseph C., 4,468,857, Cl. 29-577.00C.
Tennant Company: *See*—
Dodge, Paul D., 4,469,525, Cl. 134-3.000.
Teppa, Roberto, to Sites S.p.A. Automatic fire-arm. 4,469,006, Cl. 89-149.000.
Terasaki, Syuuzi: *See*—
Sasaki, Tohru; Terasaki, Syuuzi; and Susa, Tomoo, 4,469,747, Cl. 428-325.000.
Terashima, Isamu, to Hitachi, Ltd. Light beam printer. 4,469,430, Cl. 355-3.00R.

Terumo Corporation: *See*—
Kobayashi, Susuma, 4,469,481, Cl. 604-67.000.
Testa, Anthony: *See*—
Segal, Leon; and Testa, Anthony, 4,469,543, Cl. 156-283.000.
Tetra Pak Development S.A.: *See*—
Reil, Wilhelm, 4,469,542, Cl. 156-203.000.
Tew, George A. Wall mountable safety hatch. 4,468,886, Cl. 49-141.000.
Texaco Inc.: *See*—
Dominguez, Richard J. G., 4,469,657, Cl. 264-328.600.
Grigsby, Robert A., Jr.; Speranza, George P.; and Brennan, Michael E., 4,469,824, Cl. 521-173.000.
Knifton, John F.; and Grigsby, Robert A., Jr., 4,469,895, Cl. 568-454.000.
Kunetka, Robert E.; and Dowling, Donald J., 4,469,451, Cl. 374-136.000.
Nieh, Edward C. Y., 4,469,873, Cl. 546-344.000.
Sanderson, John R.; Watts, Lewis W., Jr.; Renken, Terry L.; and Vanderpool, Steven H., 4,469,880, Cl. 549-532.000.
Yeakey, Ernest L.; Zimmerman, Robert L.; and Brennan, Michael E., 4,469,823, Cl. 521-172.000.
Texas Instruments Incorporated: *See*—
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Guttag, Karl M.; and Carey, James, 4,469,964, Cl. 307-481.000.
Thompson, E. Earle, 4,470,127, Cl. 364-900.000.
Tezuka, Koichi: *See*—
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Thayer, Orla E. Axial flow valve. 4,469,002, Cl. 84-390.000.
Theisen, Peter J.: *See*—
Link, Donald A.; Swessel, John A., Jr.; and Theisen, Peter J., 4,470,027, Cl. 335-16.000.
Thir, Basil: *See*—
Dexheimer, Edward M.; Anchor, Michael J.; Thir, Basil; and Eisenstein, Stephen E., 4,469,820, Cl. 521-125.000.
Thoma, Wilhelm: *See*—
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Thomas & Betts Corporation: *See*—
Narozny, Ronald S., 4,469,388, Cl. 339-45.00M.
Rich, Donald S., 4,469,391, Cl. 339-97.00R.
Thomas, Christian: *See*—
Vayre, Roger; and Thomas, Christian, 4,470,028, Cl. 335-16.000.
Thomas, Georg K.: *See*—
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Thomas, Robert J.: *See*—
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,848, Cl. 29-526.00R.
Anderson, Alfred J.; Gorman, David N.; Halford, James G.; and Thomas, Robert J., 4,468,849, Cl. 29-526.00R.
Thompson, David S.: *See*—
Ashton, Richard F.; and Thompson, David S., 4,469,537, Cl. 148-440.000.
Thompson, E. Earle, to Texas Instruments Incorporated. Data terminal with error checking file transfer mode. 4,470,127, Cl. 364-900.000.
Thompson, Thomas D., III; Walsh, Thomas F.; and Botta, Frank J., to Georgia Kaolin Company, Inc. Preparation of organically modified smectites by treatment with methyl benzyl dialkyl ammonium halide. 4,469,639, Cl. 260-448.00C.
Thompson, William L.: *See*—
Keyes, Marion A., IV; and Thompson, William L., 4,470,019, Cl. 328-144.000.
Thomson-CSF: *See*—
Posseme, Gilles, 4,470,013, Cl. 324-207.000.
Thornhill, Jay W., to United States of America, National Aeronautics and Space Administration. Process and apparatus for growing a crystal ribbon. 4,469,552, Cl. 156-608.000.
Thornqvist, Allan: *See*—
Sjostrom, Stig; and Thornqvist, Allan, 4,468,838, Cl. 17-11.000.
Tihanyi, Endre; Andrasi, Ferenc; Gal, Melinda; and Sineger, Eleonora, to Alkaloida Vegyeszeti Gyar. Spiro derivatives of the pyrazolo [1,5-d] [1,2,4] triazine ring system and a process for the preparation thereof. 4,469,692, Cl. 424-249.000.
Tiletschke, Lothar; and Feldmann, Hellmuth, to Sigmna Bauelemente GmbH. Device for protecting steel reinforcements for concrete as well as a method and device for producing them. 4,468,907, Cl. 52-333.000.
Tirel, Rene : *See*—
Deschatrettes, Gerard; and Tirel, Rene , 4,468,893, Cl. 51-105.00R.
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Brubaker, Ronald L.; Tloczynski, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,469,284, Cl. 241-25.0TR.
Toagosei Chemical Industrial Co.: *See*—
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Todoh, Hidemasa, to Fuji Xerox Co., Ltd. Photo-thermal ink transferring device. 4,470,055, Cl. 346-140.00R.
Tojo, Toru: *See*—
Mori, Ichiro; Sugihara, Kazuyoshi; Shinozaki, Toshiaki; and Tojo, Toru, 4,469,949, Cl. 250-491.100.
Tokico Ltd.: *See*—
Takayama, Toshio; Ando, Hiromi; and Endou, Mitsuhiro, 4,469,009, Cl. 91-376.00R.
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Tokushima, Yasuo; Takahashi, Yoshinobu; and Fukuta, Kenji, to Toyota Jidosha Kabushiki Kaisha. System for phosphating of objects to be treated. 4,469,531, Cl. 148-6.15R.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Isono, Masaru, 4,469,416, Cl. 351-206.000.
Tokyo Sanyo Electric Co., Ltd.: *See*—
Mashimo, Katsuyuki; Masuda, Teruo; Nakayama, Toshio; Hashimoto, Masuyuki; and Kansi, Takeshi, 4,468,934, Cl. 62-495.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
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Ito, Tatsuo; Murata, Tadao; Horiuchi, Miyoshi; and Goto, Masahiro, 4,469,269, Cl. 228-173.00C.
Iwase, Satoru, 4,468,867, Cl. 34-82.000.
Morita, Hiroshi; Kato, Taketoshi; Washida, Hiroshi; and Onoe, Akira, 4,468,853, Cl. 29-572.000.
Nakai, Masanori, 4,470,061, Cl. 357-46.000.
Nosaki, Takefumi; and Hosoya, Masahiro, 4,469,435, Cl. 355-15.000.
Tago, Yoshiaki, 4,470,137, Cl. 369-100.000.
Yamaura, Mitsuru, 4,470,093, Cl. 361-68.000.
Tokyo University: *See*—
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Tomabechi, Hideo: *See*—
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Tomaszewski, Lillie C.; and Tomaszewski, Thaddeus W., to OMI International Corporation. Cyanide-free copper plating process. 4,469,569, Cl. 204-52.00R.
Tomaszewski, Thaddeus W.: *See*—
Tomaszewski, Lillie C.; and Tomaszewski, Thaddeus W., 4,469,569, Cl. 204-52.00R.
Tomino, Naoki: *See*—
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Tomita, Akira: *See*—
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Itoh, Masaaki; Kodoh, Mituo; Tomita, Akira; Hayashi, Masakatsu; and Tanaka, Takeo, 4,469,168, Cl. 165-152.000.
Tomita, Makoto; Tanaka, Tadanori; and Ebata, Toshikazu, to Horikiri Spring Manufacturing Co., Ltd. Stabilizer. 4,469,349, Cl. 280-665.000.
Tomita, Yoshifumi: *See*—
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; and Tomita, Yoshifumi, 4,469,766, Cl. 430-23.000.
Tomite, Tosio, to Hitachi, Ltd. Permanent magnet field type starting motor provided with an auxiliary. 4,469,969, Cl. 310-154.000.
Tompkins, L. Kirk, to Global Manufacturing Inc. Blast aerator. 4,469,247, Cl. 222-3.000.
Torday & Carlisle Public Limited Company: *See*—
Torday, John; and McGilly, James, 4,469,567, Cl. 204-27.000.
Torday, John; and McGilly, James, to Torday & Carlisle Public Limited Company. Treatment of copper foil. 4,469,567, Cl. 204-27.000.
Torikoshi, Yuichi: *See*—
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Toriyama, Kazuhisa: *See*—
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Torrington Company, The: *See*—
Cowles, John H., Sr., 4,469,380, Cl. 308-6.00C.
McGuffie, Michael J., 4,469,381, Cl. 308-174.000.
Toshiro, Akira; and Osaki, Yoshihiko, to Mitsubishi Denki Kabushiki Kaisha; and Toyo Tanso Co., Ltd. Inductive heating device utilizing a heat insulator. 4,469,925, Cl. 219-10.49R.
Totani, Shinzo: *See*—
Hasebe, Koshi; Totani, Shinzo; Muramoto, Kazuo; Mikuni, Hajime; Akutsu, Kazushi; and Minami, Kazuaki, 4,470,119, Cl. 364-449.000.
Tounjian, "Alfie" Alfred. Ground covering assembly. 4,468,823, Cl. 5-417.000.
Tournier, Edmond: *See*—
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Tourtelot, Edward M., Jr., deceased; and by Powers, John A., executor. Dual follower variable valve timing mechanism. 4,469,056, Cl. 123-90.160.
Toyo Kogyo Co., Ltd.: *See*—
Inoue, Hitoshi, 4,469,350, Cl. 280-675.000.
Toyo Tanso Co., Ltd.: *See*—
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Toyoda Gosei Co., Ltd.: *See*—
Hayashi, Keizo; Sumida, Atsushi; Murayama, Teruo; and Minobe, Tomio, 4,469,817, Cl. 521-45.000.
Toyoda Gosei Kabushiki Kaisha: *See*—
Yokoi, Masatada; Kondo, Toshio; Katagiri, Masayoshi; Kaisaku, Tetsuo; and Mizuno, Yoji, 4,469,337, Cl. 277-212.0FB.
Toyota Jidosha Kabushiki Kaisha: *See*—
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Kuroyanagi, Masatoshi; Suzuki, Masahiko; and Kawai, Shizuo, 4,469,069, Cl. 123-447.000.
Tokushima, Yasuo; Takahashi, Yoshinobu; and Fukuta, Kenji, 4,469,531, Cl. 148-6.15R.

Yokoi, Masatada; Kondo, Toshio; Katagiri, Masayoshi; Kaisaku, Tetsuo; and Mizuno, Yoji, 4,469,337, Cl. 277-212.0FB.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishikawa, Soichi; and Tokui, Masaaki, 4,469,164, Cl. 164-457.000.
Kobayashi, Nobuyuki; Isobe, Toshiaki; and Fukuda, Teruo, 4,469,073, Cl. 123-492.000.
Matsuoka, Fumio, 4,469,351, Cl. 280-806.000.
Watanabe, Hiroyuki; and Tanaka, Yasushi, 4,469,339, Cl. 280-5.00A.
Tracer Technologies, Inc.: *See—*
Walsh, Fraser; and Morris, R. Scott, 4,469,763, Cl. 429-101.000.
Trach, Yaroslav S.: *See—*
Belik, Vladimir K.; Kurach, Bogdan V.; and Trach, Yaroslav S., 4,469,369, Cl. 296-197.000.
Trakka Corporation: *See—*
Charles, Harold, 4,469,637, Cl. 260-429.300.
Traylor, Paul L. Spool valve. 4,469,131, Cl. 137-599.100.
Treiber, Helmut; Gotze, Christian; and Lammel, Gunter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for introducing strip-shaped material into cassettes or the like. 4,469,291, Cl. 242-191.000.
Trenton Corporation, The: *See—*
Kennedy, Ted, Jr., 4,469,469, Cl. 405-157.000.
Trepl, John A., II. Float with means for compensating for tide height differences. 4,469,955, Cl. 290-53.000.
Trezise, Richard; Boldt, John; and Gautzman, Keith, to Envision Technology, Inc. Color printer. 4,469,459, Cl. 400-216.100.
Tri-Veyor Corp.: *See—*
Becker, Lynn T., 4,469,220, Cl. 198-781.000.
Trinkel, Steven F.: *See—*
Slaats, Mathew A.; Henriott, Jay M.; Hedinger, Paul R.; and Trinkel, Steven F., 4,469,382, Cl. 312-219.000.
Troebel, Werner: *See—*
Kummerow, Gerd; Troebel, Werner; Preuss, Bernhard; and Zeuke, Reinhard, 4,468,977, Cl. 74-108.000.
Trokhan, Paul D., to Procter & Gamble Company, The. Extensible multi-ply tissue paper product. 4,469,735, Cl. 428-154.000.
Trombone, Thomas J., to Colgate-Palmolive Company. Process for dispersing hydroxypropyl methyl cellulose. 4,469,627, Cl. 252-548.000.
Truninger, Thomas, to Adna Aktiengesellschaft. Chassis with swivel-mounted wheel axles, especially for mobile cranes. 4,469,191, Cl. 180-233.000.
Trybulski, Eugene J., to Hoffmann-La Roche Inc. N-oxides of 5-oxo-1-phenyl-2-benzazepines. 4,469,633, Cl. 260-239.0BB.
Ts'o, Paul O. P.; and Miller, Paul S. Nonionic nucleic acid alkyl and aryl phosphonates and processes for manufacture and use thereof. 4,469,863, Cl. 536-27.000.
Tsubouchi, Seiji: *See—*
Fujisawa, Takao; Saito, Masayoshi; Yamada, Kohei; and Tsubouchi, Seiji, 4,469,953, Cl. 250-574.000.
Tsuchihashi, Michihiro; Anzai, Yoshinori; Kajiwara, Toshiro; and Saikatsu, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Low pressure discharge lamp with polygon shaped envelope. 4,469,986, Cl. 313-610.000.
Tsuchiya, Tsutomu: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Shitara, Tetsuo; and Sakamoto, Shuichi, 4,469,683, Cl. 424-180.000.
Tsuda, Hiroshi: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,469,323, Cl. 271-288.000.
Tsuda, Masanari: *See—*
Yoshimoto, Takeshi; and Tsuda, Masanari, 4,470,075, Cl. 358-302.000.
Tsukamoto, Kenji: *See—*
Shingu, Hideo; Arai, Kozo; Sakaguchi, Masashi; Nishide, Toshio; Watanabe, Osamu; Tashiro, Yasushi; Otsuka, Ryotatsu; and Tsukamoto, Kenji, 4,469,512, Cl. 75-63.000.
Tsunekawa, Tokuichi: *See—*
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,469,417, Cl. 354-404.000.
Tsuruoka, Setsuo; Tasaka, Iehito; Kawamura, Yuji; Kimata, Shizuo; and Wabiko, Tatsuki, to Kohryu Industrial Co. Ltd.; and Toagosei Chemical Industrial Co. Water treating compositions. 4,469,615, Cl. 252-180.000.
Tsuruoka, Takashi; Imai, Satoshi; Satoh, Atsuyuki; Watanabe, Tetsuro; Watanabe, Koji; Inouye, Shigeharu; and Nüda, Taro, to Meiji Seika Kaisha Ltd. Phosphorus-containing compounds and process for producing the same. 4,469,643, Cl. 260-502.50G.
Tsuruta, Masahiko, to Victor Company of Japan, Ltd. Tracking control system in a magnetic recording and reproducing apparatus. 4,470,079, Cl. 360-10.200.
Tsutsui, Eiji: *See—*
Yoshioka, Masahiro; Murakami, Masahiro; Tsutsui, Eiji; and Iwao, Noriyuki, 4,469,428, Cl. 355-3.0CH.
Tuohig, Wayne D.; and Sagady, Calman S., to Bendix Corporation, The. Composition and method for forming a thick film oxygen sensing element. 4,469,626, Cl. 252-514.000.
Tuovinen, Frans H.; and Lehtola, Kalervo, to Outokumpu Oy. Method and apparatus for the purification of gases which contain solid and gaseous impurities. 4,469,493, Cl. 55-89.000.
Turk, Ronald K.: *See—*
Swanson, Douglas L.; and Turk, Ronald K., 4,469,993, Cl. 318-561.000.
Turnbull, Andrew A., to U.S. Philips Corporation. Pyroelectric detector. 4,469,943, Cl. 250-338.000.
Turner, Dennis R., to AT&T Bell Laboratories. Etch procedure for optical fibers. 4,469,554, Cl. 156-657.000.
Turner, Edwin C., to Hydril Company. Well fluid pressure balanced operator for subsurface safety valve. 4,469,180, Cl. 166-324.000.
Turner, Stephen W.: *See—*
Blewett, Charles W.; and Turner, Stephen W., 4,469,912, Cl. 585-525.000.
Tyrell, John A.; Boutni, Omar M.; and Freimiller, Gary L., to General Electric Company. Composition comprising graft polycarbonates. 4,469,852, Cl. 525-468.000.
U.C. Industries: *See—*
Cisar, James R.; and Mendel, Kilian K., 4,469,652, Cl. 264-40.700.
Uda, Ryoji: *See—*
Fujikawa, Tetsuzo; Uda, Ryoji; and Yamamoto, Hitoshi, 4,469,052, Cl. 123-41.100.
Uebel, Helmut, to International Standard Electric Corporation. Axle sensor. 4,469,298, Cl. 246-249.000.
Ueda, Ikuo; and Kai, Rikiya, to Asahi Kasei Kogyo Kabushiki Kaisha. Magnetic coating compositions for magnetic recording materials. 4,469,624, Cl. 252-513.000.
Uematsu, Kimio, to Nippon Kogaku K.K. Device for preventing bounce of the movable mirror in a single lens reflex camera. 4,469,420, Cl. 354-153.000.
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Kato, Osamu, to Nippon Oil Co., Ltd. Process for production of pitch-derived carbon fibers. 4,469,667, Cl. 423-447.100.
Uhde GmbH: *See—*
Schmitt, Helmut; Schurig, Helmuth; and Strewe, Wolfgang, 4,469,577, Cl. 204-252.000.
Uhler, Kenneth C.; and West, Warren S., to Precision-Cosmet Co., Inc. Haptic attachment for intraocular lenses. 4,468,820, Cl. 3-13.000.
Ulrich, Hans; Eddins, Fred D.; Reinertsen, Tormod K.; D'Aguanno, Steven R.; and D'Ambra, Americo, Jr., to Hasbro Industries, Inc. Amusement game device. 4,469,327, Cl. 273-1.0GG.
Umbaugh, Phyllis L., administratrix: *See—*
Fisher, Gene A.; and Umbaugh, Raymond E., Sr., deceased, 4,468,972, Cl. 73-861.380.
Umbaugh, Raymond E., Sr., deceased: *See—*
Fisher, Gene A.; and Umbaugh, Raymond E., Sr., deceased, 4,468,972, Cl. 73-861.380.
Umeda, Tadashi: *See—*
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Miyoshi, Hideo; Umeda, Tadashi; and Aoki, Takashi, 4,469,432, Cl. 355-3.00R.
Umesaki, Shigeo: *See—*
Hasegawa, Shumpei; and Umesaki, Shigeo, 4,469,065, Cl. 123-359.000.
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Shitara, Tetsuo; and Sakamoto, Shuichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 3''-Epistreptomycin and its dihydro derivative, pharmaceutical compositions and production of the same. 4,469,683, Cl. 424-180.000.
Umezawa, Sumio: *See—*
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Shitara, Tetsuo; and Sakamoto, Shuichi, 4,469,683, Cl. 424-180.000.
Umkehrer, Walter, to Siemens Aktiengesellschaft. Monolithically integrated semiconductor circuit including I^2L cells. 4,469,963, Cl. 307-477.000.
Ungarean, Gary L.; and Yarwood, John C., to Olin Corporation. Electromagnetic edge control of thin strip material. 4,469,165, Cl. 164-467.000.
Union Carbide Corporation: *See—*
Blackburn, Philip R., 4,468,965, Cl. 73-587.000.
D'Silva, Themistocles D. J., 4,469,688, Cl. 424-210.000.
Ligon, Robert C., 4,469,642, Cl. 260-465.00D.
Salensky, George A., 4,469,521, Cl. 106-296.000.
Schumm, Brooke, Jr., 4,469,764, Cl. 429-86.000.
Union Oil Company of California: *See—*
Fenton, Donald M., 4,469,612, Cl. 252-88.000.
Inwood, Texas V.; Wight, Carlyle G.; and Koepke, Jeffery W., 4,469,905, Cl. 568-899.000.
Uniroyal, Inc.: *See—*
Bandlish, Baldev K.; and Nudenberg, Walter, 4,469,609, Cl. 252-19.000.
Loveless, Frederick C., 4,469,910, Cl. 585-511.000.
United Aircraft Products, Inc.: *See—*
DeSalve, Dennis W., 4,469,275, Cl. 236-93.00A.
United States Gypsum Company: *See—*
Ishii, Yasuo, 4,469,656, Cl. 264-87.000.
United States of America
Air Force: *See—*
Milberger, Walter E.; and Payer, Stephen F., 4,469,961, Cl. 307-270.000.
Army: *See—*
Burns, Bruce; and Donovan, William, 4,469,027, Cl. 102-521.000.
Gutleber, Frank S., 4,470,138, Cl. 370-18.000.
Klinger, Liliana, 4,469,724, Cl. 427-54.100.
Interior: *See—*
Iannacchione, Anthony T.; Lawhead, David H.; and Perry, John H., 4,468,973, Cl. 73-863.010.
National Aeronautics and Space Administration: *See—*
Nola, Frank J., 4,469,998, Cl. 318-729.000.
Srivastava, Santosh K., 4,469,942, Cl. 250-252.100.

Thornhill, Jay W., 4,469,552, Cl. 156-608.000.
Navy: *See*—
Cernius, Roger K.; French, Don M.; Singer, Paul A.; Adrian, Donald J.; and Parsons, Donald I., 4,470,022, Cl. 331-78.000.
Cowen, Steven J.; Daughtry, James H.; Young, Christopher M.; and Redfern, John T., 4,469,399, Cl. 350-96.200.
Forester, Donald W., 4,469,536, Cl. 148-403.000.
Geller, Myer, 4,469,443, Cl. 356-364.000.
Gill, Robert C.; and Nauflett, George W., 4,469,888, Cl. 564-109.000.
Lukens, James E.; Jain, Aloke K.; and Mankiewich, Paul M., 4,470,023, Cl. 331-107.00S.
Quinn, John J.; Strom, Ulrich; and Chang, Leroy L., 4,469,977, Cl. 310-334.000.
Scott, William R., 4,469,976, Cl. 310-334.000.
Wieder, Herman H.; and Clawson, Arthur R., 4,468,851, Cl. 29-571.000.
U.S. Philips Corporation: *See*—
Berth, Michel; Venger, Camille; and Martin, Gerard M., 4,469,528, Cl. 148-1.500.
Churchill, John E., 4,470,105, Cl. 362-396.000.
Dallas, William J., 4,469,440, Cl. 356-71.000.
Eckel, Merowech, 4,469,965, Cl. 310-254.000.
Hoeberechts, Arthur M. E.; and van Rosmalen, Gerard E., 4,469,945, Cl. 250-370.000.
Plume, Edward G., 4,470,068, Cl. 358-186.000.
Turnbull, Andrew A., 4,469,943, Cl. 250-338.000.
Wolber, Jorg; Kunze, Dieter J.; Hahn, Friedrich E.; and Demmer, Walter, 4,470,066, Cl. 358-171.000.
U.S. Windpower, Inc.: *See*—
D'Amato, Richard, 4,469,956, Cl. 290-55.000.
United Technologies Corporation: *See*—
Ebert, Frederick J., 4,470,121, Cl. 364-508.000.
Giamei, Anthony F., 4,469,160, Cl. 164-122.100.
Palmer, Leslie W., 4,470,016, Cl. 324-402.000.
Ratchford, Michael, 4,470,116, Cl. 364-424.000.
Unitex Limited: *See*—
Seddon, Robert M., 4,469,733, Cl. 428-109.000.
Universal Cooperatives, Inc.: *See*—
Fisher, Gene A.; and Umbaugh, Raymond E., Sr., deceased, 4,468,972, Cl. 73-861.380.
Universal Manufacturing Co., Inc.: *See*—
Fahrbach, Rudolf, 4,469,285, Cl. 242-7.140.
University of California, The Regents of the: *See*—
Baxter, John D.; Fettes, Ivy; and Shine, John, 4,469,631, Cl. 260-112.50E.
University of Florida: *See*—
Shah, Dinesh O.; Adiga, K. C.; and SunderRam, A. N., 4,469,486, Cl. 44-51.000.
University of Missouri, The Curators of the: *See*—
Mawhinney, Thomas P.; and Madson, Michael A., 4,469,794, Cl. 436-127.000.
University of Southern California: *See*—
Goldstein, Abraham M. B., 4,469,108, Cl. 128-694.000.
Uno, Yoshihiro: *See*—
Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, 4,470,072, Cl. 358-260.000.
UNR Industries, Inc.: *See*—
Helle, Gordon W.; Adams, Homer C.; and Kleine, Richard A., 4,469,083, Cl. 126-61.000.
UOP Inc.: *See*—
Schmidt, Robert J., 4,469,903, Cl. 568-918.000.
Upjohn Company, The: *See*—
Anderson, Bradley D.; and Conradi, Robert A., 4,469,689, Cl. 424-243.000.
Ushio Denki Kabushiki Kaisha: *See*—
Mimura, Yoshiki, 4,469,529, Cl. 148-1.500.
Utagawa, Ken, to Nippon Kogaku K.K. Distance measuring apparatus. 4,469,939, Cl. 250-204.000.
V.F.M. Verkoop en Fabrikatie van Metaalprodukten Naamloze Vennootscap: *See*—
Driesmans, Jean, 4,469,085, Cl. 126-160.000.
V.G.A.S., Inc.: *See*—
Jackson, Kenneth A.; Arndt, George I.; and Maynard, James L., 4,469,075, Cl. 123-523.000.
Valeo: *See*—
Herbulot, Jean; and Jumel, Bernard, 4,469,203, Cl. 188-218.0XL.
Valerco Corporation: *See*—
Valesko, Thomas M., 4,469,300, Cl. 248-97.000.
Valesko, Thomas M., to Valerco Corporation. Wire bag stand for holding plastic bag. 4,469,300, Cl. 248-97.000.
Valmet-Dominion Inc.: *See*—
Greding, Robert, 4,469,286, Cl. 242-65.000.
van de Grampel, Johan C.: *See*—
Labarre, Jean-Francois; Sournies, Francois; van de Grampel, Johan C.; and Van Der Huizen, Adriaan A., 4,469,687, Cl. 424-200.000.
van den Boom, Johannes; Leitner, Wilfried; Salewsky, Gert; and Gassen, Hans-Peter, to Audi Nsu Auto Union AG. Elastomeric mount with hydraulic damping. 4,469,316, Cl. 267-140.100.
van der Hauw, Tjerk; and Jaspers, Hans, to Akzona. Photopolymerizable composition, photoinitiator mixture and curing process. 4,469,575, Cl. 204-159.190.
Van Der Huizen, Adriaan A.: *See*—
Labarre, Jean-Francois; Sournies, Francois; van de Grampel, Johan C.; and Van Der Huizen, Adriaan A., 4,469,687, Cl. 424-200.000.
Vanderpool, Clarence D.: *See*—
Cheresnowsky, Michael J.; and Vanderpool, Clarence D., 4,469,505, Cl. 75-0.5BA.
Vanderpool, Steven H.: *See*—
Sanderson, John R.; Watts, Lewis W., Jr.; Renken, Terry L.; and Vanderpool, Steven H., 4,469,880, Cl. 549-532.000.
Vander Wal, Nicholas M.: *See*—
Keech, David A.; Kirchner, Robert T.; Vander Wal, Nicholas M.; Sorenson, John E.; and Driscoll, Mark D., 4,468,962, Cl. 73-200.000.
Vandevelde, Leon E. J.; Baetsle, Leon H. J. M.; and Huys, Daniel J. G., to Centre d'Etude de l'Energie Nucleaire, "C.E.N." . Method for extracting fluoride ions from a nuclear fuel solution. 4,469,629, Cl. 252-631.000.
Van Heek, Karl H.: *See*—
Peters, Werner; Juntgen, Harald; Van Heek, Karl H.; Kirchhoff, Reinhold; and Wagener, Heinrich, 4,469,487, Cl. 48-86.00R.
Van Overloop, Ronald R., to Kendall Company, The. Scrub sponge with projection and well. 4,469,463, Cl. 401-134.000.
Van Pelt, Richard W.; and McCarthy, Donald F., to Storage Technology Corporation. Digital clocking and detection system for a digital storage system. 4,470,082, Cl. 360-51.000.
van Rosmalen, Gerard E.: *See*—
Hoeberechts, Arthur M. E.; and van Rosmalen, Gerard E., 4,469,945, Cl. 250-370.000.
van Santen, Rutger A.: *See*—
Gaaf, Jan; and van Santen, Rutger A., 4,469,813, Cl. 502-263.000.
Van Staveren, Hendrikus C.: *See*—
Vissers, Hermanus H.; Van Staveren, Hendrikus C.; and Weststrate, Marinus H., 4,468,916, Cl. 56-13.600.
Van Steenwyk, Donald H., to Applied Technologies Associates. High speed well surveying. 4,468,863, Cl. 33-304.000.
van Weenen, Willem F., to Kinetics Technology International Corporation. Disc operated gas purification system. 4,469,494, Cl. 55-179.000.
Varex Corporation: *See*—
Beaver, Lois A.; and Guiochon, Georges A., 4,469,601, Cl. 210-658.000.
Varian Associates, Inc.: *See*—
Taylor, Norman J.; and Petric, Paul F., 4,469,950, Cl. 250-492.200.
Vassallo, Donald A.: *See*—
Hoh, George L.; and Vassallo, Donald A., 4,469,754, Cl. 428-476.300.
Vauss, Elvin M.: *See*—
Covitch, Michael J.; DeRespiris, Donald L.; Benezra, Leo L.; and Vauss, Elvin M., 4,469,579, Cl. 204-283.000.
Vayre, Roger; and Thomas, Christian, to La Telemecanique Electrique. Mechanically controlled switch with automatic opening. 4,470,028, Cl. 335-16.000.
Vazin, Gholam R., to Chevron Research Company. Tank truck purging system. 4,469,143, Cl. 141-1.000.
VEB Edelstahlwerk: *See*—
Spiegelberg, Karl; Hoffmann, Herbert; Jeske, Helmfried; Kolm, Alexander; and Ebeling, Fred, 4,469,932, Cl. 219-121.0PA.
Veneklasen, Lee H.; and DeVore, William J., to Perkin-Elmer Corp., The. Composite concentric-gap magnetic lens. 4,469,948, Cl. 250-396.0ML.
Venger, Camille: *See*—
Berth, Michel; Venger, Camille; and Martin, Gerard M., 4,469,528, Cl. 148-1.500.
Venkatesan, V. N., to Mobil Oil Corporation. Recovery of viscous oil from asphaltic oil-containing formations. 4,469,177, Cl. 166-261.000.
Ventre Corporation: *See*—
Deaver, Dann T., 4,469,366, Cl. 296-97.00A.
Verhoeven, Laurentius M., to Du Pont de Nemours, E. I., and Company. Press-fit electrical terminals. 4,469,394, Cl. 339-221.00R.
Vernon, Michel: *See*—
Lemoine, Guy; Lucas, Robert; and Vernon, Michel, 4,469,819, Cl. 521-79.000.
Victor Company of Japan, Limited: *See*—
Fujiki, Kuniharu; Matsumoto, Yukio; and Yoshida, Hiroshi, 4,469,750, Cl. 428-447.000.
Hirata, Atsumi; Mitsui, Katsuyuki; and Koumatsu, Yasutaka, 4,470,078, Cl. 358-342.000.
Kobayashi, Osamu, 4,469,751, Cl. 428-447.000.
Sakaki, Tetsuro; and Yamanaka, Akira, 4,470,130, Cl. 369-230.000.
Tsuruta, Masahiko, 4,470,079, Cl. 360-10.200.
Victor Equipment Company: *See*—
Laing, David A., 4,469,311, Cl. 266-67.000.
Vieth, Harold F., to Deere & Company. Transmission reverser unit. 4,468,983, Cl. 74-784.000.
Viewsonics, Inc.: *See*—
Ackerman, Abram, 4,469,386, Cl. 339-37.000.
Vildgrube, Vladimir G.: *See*—
Sergeev, Jury S.; Shatalov, Stanislav M.; Vildgrube, Vladimir G.; Gandelsman, Iosif L.; Kuznetsova, Valeria K.; Libman, Iosif S.; Ljukshin, Egor N.; Frolov, Vyacheslav I.; and Kostikov, Valery I., 4,469,984, Cl. 313-348.000.
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Vissers, Hermanus H.; Van Staveren, Hendrikus C.; and Weststrate, Marinus H., to Multinorm B.V. Mowing device comprising a divided cutter bar. 4,468,916, Cl. 56-13.600.
Vogel, Martin: *See*—
Kowalski, Alexander; and Vogel, Martin, 4,469,825, Cl. 523-201.000.

Vogele, Gunther; and Lemke, Kuno, to Robert Bosch GmbH. Filling apparatus for viscous products. 4,469,148, Cl. 141-87.000.

Vogt, William R.; and Wynne, John M., to Baker Industries, Inc. Bidirectional, interactive fire detection system. 4,470,047, Cl. 340-825.360.

Voith, Katherine: *See—*
Bagli, Jehan F.; Bogri, Tibor; and Voith, Katherine, 4,469,693, Cl. 424-250.000.
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Volvo Flygmotor AB: *See—*
Eriksson, T. Lennart; Andersson, Ebert; and Nystrom, Olle, 4,469,034, Cl. 110-346.000.

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Vsesojuzny Energeticheskiy Institut Imeni: *See—*
Perevodchikov, Vladimir I.; Akimov, Pavel I.; Skibityansky, David A.; Shapenko, Valentina N.; Loginov, Lev V.; Shapiro, Alexandr L.; Yakovlev, Arkady N.; and Kosmachevsky, Vitaly M., 4,469,982, Cl. 313-293.000.

Vsesojuzny Konstruktorsko-Experimentalny Institut Avtobusostroenya: *See—*
Belik, Vladimir K.; Kurach, Bogdan V.; and Trach, Yaroslav S., 4,469,369, Cl. 296-197.000.

Vu, Ho Q.: *See—*
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Vyvial, Rudolf: *See—*
Lynch, John; Vyvial, Rudolf; Zuerger, Manfred; and Borho, Klaus, 4,469,775, Cl. 430-273.000.

W. J. Bradford Paper Company: *See—*
McFadden, Michael B.; and Honeysett, Randal M., 4,469,272, Cl. 229-28.00R.

W. R. Grace & Co.: *See—*
Wang, Shu-Chieh P.; and Sherwin, Martin B., 4,469,904, Cl. 568-948.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Oberle, Timothy T.; Schirmer, Henry G.; Bornstein, Norman D.; and Walters, Johnnie J., 4,469,742, Cl. 428-215.000.

W. Schlafhorst & Co.: *See—*
Rohner, Joachim; Zumfeld, Heinz; and Mauries, Reinhard, 4,468,918, Cl. 57-22.000.

Wabiko, Tatsuki: *See—*
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Wacker, Alfred: *See—*
Grahmann, Helmut; Hofmann, Dieter; and Wacker, Alfred, 4,469,983, Cl. 313-318.000.

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Williams, Charles G. D., to Environmentally Safe Products, Corp. Mouse trap. 4,468,883, Cl. 43-61.000.
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Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., to Bunsup & Sims Inc. Apparatus for pulling cable through underground conduit. 4,469,306, Cl. 254-134.3FT.
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Woods, James W.; St. Denis, John N.; and Chapman, Dana A., to Mallinckrodt Inc. Immunoassay involving soluble complex of second antibody and labeled binding protein. 4,469,787, Cl. 435-7.000.
Wooldridge, Bobby M. Fuel mixture method and apparatus for internal combustion engines. 4,469,077, Cl. 123-548.000.
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Wrobel, Joseph J., to Eastman Kodak Company. Optical disc write/-read apparatus with disc mounting means. 4,470,054, Cl. 346-137.000.
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Tanaka, Akiyoshi; Sannomiya, Kunio; Kotera, Hiroaki; Yoshida, Kunio; Uno, Yoshihiro; and Miwa, Hiroaki, 4,470,072, Cl. 358-260.000.
Yoshimoto, Takeshi; and Tsuda, Masanari, to Dainippon Screen Seizo Kabushiki Kaisha. Method and apparatus for recording a reproduction picture having a substantially continuous tone in a picture scanning and recording system. 4,470,075, Cl. 358-302.000.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, to Asahi-Dow Limited. Cold drawn high-orientation multilayered film and process for manufacture of said film. 4,469,752, Cl. 428-475.800.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, to Asahi-Dow Limited. Cold drawn high-orientation multilayered film and process for manufacture of said film. 4,469,753, Cl. 428-475.800.
Yoshioka, Masahiro; Murakami, Masahiro; Tsutsui, Eiji; and Iwao, Noriyuki, to Mita Industrial Co., Ltd. Corona discharging apparatus used in an electrostatic photographic copying machine. 4,469,428, Cl. 355-3.0CH.
Yoshizawa, Atsushi: *See*—
Matsui, Fumio; Sashida, Mitsuaki; Komaki, Toshihiro; and Yoshizawa, Atsushi, 4,469,424, Cl. 354-298.000.
Yoshizumi, Toshihiko: *See*—
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Young, Christopher M.: *See*—
Cowen, Steven J.; Daughtry, James H.; Young, Christopher M.; and Redfern, John T., 4,469,399, Cl. 350-96.200.
Young, Leroy D., Jr., to John Ellis Enterprises. Fretboard to synthesizer interface apparatus. 4,468,997, Cl. 84-1.010.
Young, Robert W.; and Friedenreich, Harry J., to Otis Elevator Company. Releasable hoistway door safety interlock. 4,469,200, Cl. 187-61.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, to Minolta Camera Kabushiki Kaisha. Light measurement and light control data calculation device for a photographic enlarger. 4,469,437, Cl. 355-68.000.
Yuen, Pui-Ho: *See*—
Zupon, Michael A.; Sequeira, Joel A.; Kirschner, Alan S.; and Yuen, Pui-Ho, 4,469,228, Cl. 206-568.000.
Yuzawa, Haruo: *See*—
Ishigami, Kazuhiro; and Yuzawa, Haruo, 4,468,950, Cl. 73-35.000.
Yuzawa, Yasutaka, to Diesel Kiki Company, Ltd. Injection timing compensator for fuel injection pump. 4,469,066, Cl. 123-380.000.
Zabler, Erich: *See*—
Linder, Ernst; Linn, Karl-Otto; Moser, Winfried; Muller, Klaus; and Zabler, Erich, 4,468,949, Cl. 73-35.000.
Zagefka, Hans-Dieter: *See*—
Konietzny, Alfred; Zagefka, Hans-Dieter; Rombusch, Konrad; and Bax, Hanns-Jorg, 4,469,829, Cl. 524-103.000.
Zahnradfabrik Friedrichshafen, AG.: *See*—
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Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Shitara, Tetsuo; and Sakamoto, Shuichi, 4,469,683, Cl. 424-180.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
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Zavala, Anthony J.: *See*—
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Zenith Electronics Corporation: *See*—
Blacker, Allen P.; and Garewal, Khem K. S., 4,469,987, Cl. 315-14.000.
Zerdian, James; and Spector, George. Spring lid lifter pressure cooker. 4,469,237, Cl. 220-209.000.
Zeuke, Reinhard: *See*—
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Zimmerman, Robert L.: *See*—
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Zimmerman, Ronald E.; Burck, Philip J.; and Dunn, Richard L., to Eli Lilly and Company. Contraceptive device. 4,469,671, Cl. 424-16.000.
Zison, Stanley W.; and Roqueta, Alex, to Getty Synthetic Fuels, Inc. Landfill gas recovery system and method with pressure symmetry. 4,469,176, Cl. 166-250.000.
Zoecon Corporation: *See*—
Anderson, Richard J.; and Lee, Shy-Fuh, 4,469,872, Cl. 546-302.000.
Curtis, Ralston; and Papanu, Steven C., 4,469,675, Cl. 424-78.000.

Weiss, Thomas J. Shift mechanism for bicycles. 4,469,478, Cl. 474-80.000.

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Wenthe, Stephen J., Jr., to Xerox Corporation. Dual mode stack sensor. 4,469,320, Cl. 271-98.000.

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Schaulin, Jean-Michel; Gantin, Robert; and Kanat, Yasar, 4,469,005, Cl. 89-33.140.

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West Electric Co., Ltd.: *See—*
Maruyama, Yuji; and Horinishi, Katsumi, 4,469,990, Cl. 315-241.00P.

West, Michael S.: *See—*
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West, Warren S.: *See—*
Uhler, Kenneth C.; and West, Warren S., 4,468,820, Cl. 3-13.000.

Westbrooks, Larry. Door lock assembly. 4,469,359, Cl. 292-288.000.

Western Clinical Engineering Ltd.: *See—*
McEwen, James A., 4,469,099, Cl. 128-327.000.

Western Gear Corporation: *See—*
Franchuk, John M.; and Blanchet, James P., 4,469,267, Cl. 226-172.000.

Westinghouse Electric Corp.: *See—*
Carr, Walter J., Jr., 4,470,090, Cl. 361-19.000.
Chewning, Marshall T., Jr.; and Borgoyn, Thomas P., 4,469,393, Cl. 339-198.0GA.
Gyugyi, Laszlo, 4,470,005, Cl. 323-210.000.
Keeton, Alvin R.; and Ciarelli, Philip A., Jr., 4,469,471, Cl. 417-50.000.
Polis, Marjorie J.; Dirnberger, Linus R.; and Kersen, Matthew F., 4,469,199, Cl. 187-29.000.
Sun, Shan C.; and DelCoco, Robert J., 4,470,091, Cl. 361-20.000.
Sutherland, James F.; and Cook, Henry F., 4,470,041, Cl. 340-644.000.

Westphal, James A.; and Carr, Michael A., to California Institute of Technology. Tilt meter. 4,468,864, Cl. 33-366.000.

Westphal, Scott. Tamper and child-resistant container. 4,469,241, Cl. 220-346.000.

Weststrate, Marinus H.: *See—*
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Whirlpool Corporation: *See—*
Fish, Warren H., 4,469,498, Cl. 55-335.000.
Grierson, Keith J.; and Mokrzycki, Eugene H., 4,469,967, Cl. 310-71.000.

White, Leslie R., to Hilliard Corporation, The. Filter device. 4,469,598, Cl. 210-489.000.

White, Trevor J.: *See—*
Gardner, Derek V.; and White, Trevor J., 4,469,697, Cl. 424-250.000.

Whitehead, Robert E., to Electronic Packaging Co. System for manufacturing, changing, repairing, and testing printed circuit boards. 4,469,553, Cl. 156-627.000.

Whitman Medical Corporation: *See—*
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Wiebelhaus, Virgil D.: *See—*
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Wieder, Herman H.; and Clawson, Arthur R., to United States of America, Navy. Process for making a heterojunction source-drain insulated gate field-effect transistors utilizing diffusion to form the lattice. 4,468,851, Cl. 29-571.000.

Wight, Carlyle G.: *See—*
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Wilczak, Fred F.: *See—*
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Wilkinson, Harold C.; Mkitarian, Alan W.; Navarra, Vito P.; and Preston, Francis J., to KSM Fastening Systems, Inc. Top loading detachable stud feeding assembly. 4,469,928, Cl. 219-98.000.

Williams, Austin M., to Hughes Aircraft Company. Single sideband quadricorrelator. 4,470,145, Cl. 375-1.000.

Williams, Charles G. D., to Environmentally Safe Products, Corp. Mouse trap. 4,468,883, Cl. 43-61.000.

Willowtech, Inc.: *See—*
Wurtz, William O., 4,469,445, Cl. 366-300.000.

Willson, Richard F.: *See—*
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Wilson, Billie J.; and Wilson, Jack C. Fluid layering device. 4,469,151, Cl. 141-286.000.

Wilson, David A.: *See—*
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Wilson, Jack C.: *See—*
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Wilson, Pamela: *See—*
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Wilson, Pryce. Multi-walled structures for controlled environmental use. 4,468,902, Cl. 52-80.000.

Wilson, Thomas W., to Accessory Sales, Inc. Method and apparatus for cleaning air entering the cab of a vehicle. 4,469,490, Cl. 55-1.000.

Wimer, Delbert W.; Carlson, Daniel C.; Elwood, Edward C.; and Stewart, Eugene T., to Burnup & Sims Inc. Apparatus for pulling cable through underground conduit. 4,469,306, Cl. 254-134.3FT.

Winderlich, Hans-Georg: *See—*
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Wing, Milton S.: *See—*
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Winn, Stanley. Tap dancing shoe taps. 4,468,871, Cl. 36-139.000.

Wirstlin, Arthur N.: *See—*
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Wlodkowski, Johann: *See—*
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Wolber, Jorg; Kunze, Dieter J.; Hahn, Friedrich E.; and Demmer, Walter, to U.S. Philips Corporation. Circuit arrangement for adjusting the direct current level of a video signal. 4,470,066, Cl. 358-171.000.

Wolf, Richard A.: *See—*
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Wolff, Carl. Liquid fuel treatment apparatus. 4,469,076, Cl. 123-538.000.

Woodard, Kenneth E., Jr.: *See—*
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Wooding, Patrick J., to Wooding. Ultrahigh velocity water-cooled copper spinner. 4,468,931, Cl. 62-373.000.

Woods, James W.; St. Denis, John N.; and Chapman, Dana A., to Mallinckrodt Inc. Immunoassay involving soluble complex of second antibody and labeled binding protein. 4,469,787, Cl. 435-7.000.

Wooldridge, Bobby M. Fuel mixture method and apparatus for internal combustion engines. 4,469,077, Cl. 123-548.000.

Woolf, Anthony J.: *See—*
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Worm, Manfred: *See—*
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Wray, Daniel X., to Dynamic Disk, Inc. Method and apparatus for producing electroplated magnetic memory disk, and the like. 4,469,566, Cl. 204-23.000.

Wright, James D.: *See—*
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Wright, Robert V.; and Csiszar, Charles, to Champion International Corporation. Tray with compound sealed lid. 4,469,258, Cl. 229-43.000.

Wrobel, Joseph J., to Eastman Kodak Company. Optical disc write/-read apparatus with disc mounting means. 4,470,054, Cl. 346-137.000.

Wurtz, William O., to Willowtech, Inc. Wall scraping mixing tool. 4,469,445, Cl. 366-300.000.

Wynne, John M.: *See—*
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Wyss, Urs; and Federer, Johannes, to Maag Gear-Wheel & Machine Company Limited. Method for reducing the hardening distortion during case hardening of large toothed rims formed of steel and support body members suitable for such purpose. 4,469,530, Cl. 148-16.500.

Xerox Corporation: *See—*
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Yamada, Mitsuhiko, to Dainippon Screen Mfg. Co., Ltd. Method of scanning and recording images. 4,470,074, Cl. 358-287.000.

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Yamaguchi, Ken, to Honda Giken Kogyo Kabushiki Kaisha. Fuel tank assembly for a motorcycle. 4,469,190, Cl. 180-219.000.
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Yamane, Isao; Sato, Takeshi; Kudo, Toshio; Minamoto, Yoshiki; and Tachibana, Takehiko, to Ajinomoto Co., Inc. Continuous and spontaneous interferon producing lymphoblastoid cell lines, process for preparing the same, and process for the human interferon production by the same. 4,469,790, Cl. 435-68.000.
Yamane, Shiro: *See*—
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Yamasaki, Toshihiro; and Jinbo, Kensaku, to Mitsubishi Denki Kabushiki Kaisha. Chassis dynamometer. 4,468,955, Cl. 73-117.000.
Yamaura, Mitsuru, to Tokyo Shibaura Denki Kabushiki Kaisha. Protective relay system and sampling synchronizing method therefor. 4,470,093, Cl. 361-68.000.
Yamazaki, Masaru: *See*—
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Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Liquid crystal display with vertical non-single crystal semiconductor field effect transistors. 4,470,060, Cl. 357-41.000.
Yamazaki, Yoshihiko; Yamamoto, Hitoshi; Furusawa, Kahei; Ejiri, Yoshihiro; and Nunokawa, Makoto, to Kokusai Denshin Denwa Kabushiki Kaisha. Optical fiber unit for optical submarine cables. 4,469,401, Cl. 350-96.230.
Yamazaki, Yoshio; Gunzi, Kouichi; and Inowa, Shigeru, to Konishiroku Photo Industry Co., Ltd. Cleaning apparatus for electrophotography. 4,469,434, Cl. 355-15.000.
Yan, Tsoung Y., to Mobil Oil Corporation. Zone combustion of high sulfur coal to reduce SO_x emission. 4,469,032, Cl. 110-342.000.
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Yananton, Patrick. Odorless animal litter unit. 4,469,046, Cl. 119-1.000.
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Yatsuzuka, Yohtaro; and Suyderhoud, Henri G., to Communications Satellite Corporation. Adaptive quantizer with instantaneous error robustness. 4,470,146, Cl. 375-30.000.
Yeakey, Ernest L.; Zimmerman, Robert L.; and Brennan, Michael E., to Texaco Inc. Flexible polyurethane foams made using an aromatic polyester polyol. 4,469,823, Cl. 521-172.000.
Yokohama Rubber Co., Ltd., The: *See*—
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Yokomizo, Hiroshi: *See*—
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Yoo, Jin S.; and Jaecker, John A., to Atlantic Richfield Company. Catalyst and process for conversion of hydrocarbons. 4,469,589, Cl. 208-120.000.
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Yoshida, Hiroshi: *See*—
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Yoshida, Kunio: *See*—
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Yoshimoto, Takeshi; and Tsuda, Masanari, to Dainippon Screen Seizo Kabushiki Kaisha. Method and apparatus for recording a reproduction picture having a substantially continuous tone in a picture scanning and recording system. 4,470,075, Cl. 358-302.000.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, to Asahi-Dow Limited. Cold drawn high-orientation multilayered film and process for manufacture of said film. 4,469,752, Cl. 428-475.800.
Yoshimura, Isao; Mizukami, Osamu; Hata, Hideo; Kageyama, Junichi; and Kaneko, Takashi, to Asahi-Dow Limited. Cold drawn high-orientation multilayered film and process for manufacture of said film. 4,469,753, Cl. 428-475.800.
Yoshioka, Masahiro; Murakami, Masahiro; Tsutsui, Eiji; and Iwao, Noriyuki, to Mita Industrial Co., Ltd. Corona discharging apparatus used in an electrostatic photographic copying machine. 4,469,428, Cl. 355-3.0CH.
Yoshizawa, Atsushi: *See*—
Matsui, Fumio; Sashida, Mitsuaki; Komaki, Toshihiro; and Yoshizawa, Atsushi, 4,469,424, Cl. 354-298.000.
Yoshizumi, Toshihiko: *See*—
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Young, Leroy D., Jr., to John Ellis Enterprises. Fretboard to synthesizer interface apparatus. 4,468,997, Cl. 84-1.010.
Young, Robert W.; and Friedenreich, Harry J., to Otis Elevator Company. Releasable hoistway door safety interlock. 4,469,200, Cl. 187-61.000.
Yuasa, Yoshio; Yasumoto, Hidetoshi; Naruse, Kazuhiko; Kawagoe, Nobukazu; and Inaba, Masahito, to Minolta Camera Kabushiki Kaisha. Light measurement and light control data calculation device for a photographic enlarger. 4,469,437, Cl. 355-68.000.
Yuen, Pui-Ho: *See*—
Zupon, Michael A.; Sequeira, Joel A.; Kirschner, Alan S.; and Yuen, Pui-Ho, 4,469,228, Cl. 206-568.000.
Yuzawa, Haruo: *See*—
Ishigami, Kazuhiro; and Yuzawa, Haruo, 4,468,950, Cl. 73-35.000.
Yuzawa, Yasutaka, to Diesel Kiki Company, Ltd. Injection timing compensator for fuel injection pump. 4,469,066, Cl. 123-380.000.
Zabler, Erich: *See*—
Linder, Ernst; Linn, Karl-Otto; Moser, Winfried; Muller, Klaus; and Zabler, Erich, 4,468,949, Cl. 73-35.000.
Zagefka, Hans-Dieter: *See*—
Konietzny, Alfred; Zagefka, Hans-Dieter; Rombusch, Konrad; and Bax, Hanns-Jorg, 4,469,829, Cl. 524-103.000.
Zahnradfabrik Friedrichshafen, AG.: *See*—
Loffler, Alfons, 4,469,011, Cl. 91-433.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Umezawa, Sumio; Tsuchiya, Tsutomu; Shitara, Tetsuo; and Sakamoto, Shuichi, 4,469,683, Cl. 424-180.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; and Ohmi, Tadahiro, 4,470,059, Cl. 357-22.000.
Zavala, Anthony J.: *See*—
Merrel, Richard C., 4,468,897, Cl. 51-259.000.
Zenith Electronics Corporation: *See*—
Blacker, Allen P.; and Garewal, Khem K. S., 4,469,987, Cl. 315-14.000.
Zerdian, James; and Spector, George. Spring lid lifter pressure cooker. 4,469,237, Cl. 220-209.000.
Zeuke, Reinhard: *See*—
Kummerow, Gerd; Troebel, Werner; Preuss, Bernhard; and Zeuke, Reinhard, 4,468,977, Cl. 74-108.000.
Zielsdorf, Randall A.: *See*—
Figler, Alan A.; Wilson, Pamela; and Zielsdorf, Randall A., 4,469,480, Cl. 604-52.000.
Zimmerman, Robert L.: *See*—
Yeakey, Ernest L.; Zimmerman, Robert L.; and Brennan, Michael E., 4,469,823, Cl. 521-172.000.
Zimmerman, Ronald E.; Burck, Philip J.; and Dunn, Richard L., to Eli Lilly and Company. Contraceptive device. 4,469,671, Cl. 424-16.000.
Zison, Stanley W.; and Roqueta, Alex, to Getty Synthetic Fuels, Inc. Landfill gas recovery system and method with pressure symmetry. 4,469,176, Cl. 166-250.000.
Zoecon Corporation: *See*—
Anderson, Richard J.; and Lee, Shy-Fuh, 4,469,872, Cl. 546-302.000.
Curtis, Ralston; and Papanu, Steven C., 4,469,675, Cl. 424-78.000.

Zoller, Alfons: *See*—
Schwiecker, Horst; and Zoller, Alfons, 4,469,713, Cl. 427-10.000.

Zuber, Chester L.: *See*—
Bowman, Kenneth A.; and Zuber, Chester L., 4,468,847, Cl. 29-403.400.

Zuercher, Joseph C.: *See*—
Christian, Raymond R.; and Zuercher, Joseph C., 4,468,857, Cl. 29-577.00C.

Zuerger, Manfred: *See*—
Lynch, John; Vyvial, Rudolf; Zuerger, Manfred; and Borho, Klaus, 4,469,775, Cl. 430-273.000.

Zumfeld, Heinz: *See*—
Rohner, Joachim; Zumfeld, Heinz; and Mauries, Reinhard, 4,468,918, Cl. 57-22.000.

Zupon, Michael A.; Sequeira, Joel A.; Kirschner, Alan S.; and Yuen, Pui-Ho, to Schering Corporation. Interferon kit. 4,469,228, Cl. 206-568.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF SEPTEMBER, 1984

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AAR Corp.: *See*—
Mollon, Leslie, Re. 31,661, Cl. 250-507.100.

Bendix Corporation, The: *See*—
Rachel, Todd L., Re. 31,658, Cl. 123-488.000.

Brown, Michael J. Sanitary backwashing system for automatic milking machines. Re. 31,659, Cl. 119-14.180.

Caruso, John T., to Moog Inc. Feedback mechanism for variable displacement hydraulic device having an electrohydraulic controller. Re. 31,657, Cl. 91-375.00R.

Clayton Manufacturing Company: *See*—
Howes, Peter A., Re. 31,656, Cl. 73-117.300.

Hisatsuka, Kenichi; Ishiyama, Saburo; Inoue, Akira; Tsumura, Osamu; and Sato, Mikio, to Idemitsu Kosan Company Limited. Polysaccharide obtained from *Pseudomonas stutzeri*. Re. 31,664, Cl. 536-123.000.

Holmes, Robert G., to Ohio Agricultural Research and Development Center. Sorting system and apparatus. Re. 31,660, Cl. 209-699.000.

Howes, Peter A., to Clayton Manufacturing Company. Engine ignition and power analyzer. Re. 31,656, Cl. 73-117.300.

Idemitsu Kosan Company Limited: *See*—
Hisatsuka, Kenichi; Ishiyama, Saburo; Inoue, Akira; Tsumura, Osamu; and Sato, Mikio, Re. 31,664, Cl. 536-123.000.

Inoue, Akira: *See*—
Hisatsuka, Kenichi; Ishiyama, Saburo; Inoue, Akira; Tsumura, Osamu; and Sato, Mikio, Re. 31,664, Cl. 536-123.000.

Ishiyama, Saburo: *See*—
Hisatsuka, Kenichi; Ishiyama, Saburo; Inoue, Akira; Tsumura, Osamu; and Sato, Mikio, Re. 31,664, Cl. 536-123.000.

Kung, Roger I.; and Moench, Jerry D., to Motorola, Inc. Output buffer with voltage sustainer circuit. Re. 31,662, Cl. 307-530.000.

Kung, Roger I.; and Moench, Jerry D., to Motorola, Inc. Dynamic output buffer. Re. 31,663, Cl. 307-530.000.

Moench, Jerry D.: *See*—
Kung, Roger I.; and Moench, Jerry D., Re. 31,662, Cl. 307-530.000.
Kung, Roger I.; and Moench, Jerry D., Re. 31,663, Cl. 307-530.000.

Mollon, Leslie, to AAR Corp. Spent nuclear fuel storage racks. Re. 31,661, Cl. 250-507.100.

Moog Inc.: *See*—
Caruso, John T., Re. 31,657, Cl. 91-375.00R.

Motorola, Inc.: *See*—
Kung, Roger I.; and Moench, Jerry D., Re. 31,662, Cl. 307-530.000.
Kung, Roger I.; and Moench, Jerry D., Re. 31,663, Cl. 307-530.000.

Ohio Agricultural Research and Development Center: *See*—
Holmes, Robert G., Re. 31,660, Cl. 209-699.000.

Rachel, Todd L., to Bendix Corporation, The. Fuel injection system. Re. 31,658, Cl. 123-488.000.

Sato, Mikio: *See*—
Hisatsuka, Kenichi; Ishiyama, Saburo; Inoue, Akira; Tsumura, Osamu; and Sato, Mikio, Re. 31,664, Cl. 536-123.000.

Tsumura, Osamu: *See*—
Hisatsuka, Kenichi; Ishiyama, Saburo; Inoue, Akira; Tsumura, Osamu; and Sato, Mikio, Re. 31,664, Cl. 536-123.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Clark, William T., II. Process for suppressing immunity to transplants. B1 4,321,918, 9-4-84, Cl. 604-4.000.

Daly, Robert E.: *See*—
Gacki, Leonard W.; and Daly, Robert E., B1 4,197,942, Cl. 206-219.000.

Gacki, Leonard W.; and Daly, Robert E., to Picker Corporation. Containerized fluid supply for fluid mixing and dispensing system. B1 4,197,942, 9-4-84, Cl. 206-219.000.

Janata, Jiri A.: *See*—
Johnson, Curtis C.; Moss, Stanley D.; and Janata, Jiri A., B1 4,020,830, Cl. 128-635.000.

Johnson, Curtis C.; Moss, Stanley D.; and Janata, Jiri A., to University of Utah, The. Selective chemical sensitive FET transducers. B1 4,020,830, 9-4-84, Cl. 128-635.000.

Moss, Stanley D.: *See*—
Johnson, Curtis C.; Moss, Stanley D.; and Janata, Jiri A., B1 4,020,830, Cl. 128-635.000.

Picker Corporation: *See*—
Gacki, Leonard W.; and Daly, Robert E., B1 4,197,942, Cl. 206-219.000.

University of Utah, The: *See*—
Johnson, Curtis C.; Moss, Stanley D.; and Janata, Jiri A., B1 4,020,830, Cl. 128-635.000.

Willcox, Frederick P. Compliant ribbon-guiding structure. B1 4,047,608, 9-4-84, Cl. 400-208.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
McCarthy, Alfred F., 275,388, Cl. D13-23.000.

AB Robacks Mekaniska: *See*—
Bostrom, Sture, 275,420, Cl. D25-3.000.

Ahlovist, Claes; and Olsen, Christer. Element for a manure container. 275,415, 9-4-84, Cl. D23-2.000.

Albano, Thomas G. Portable reading lamp. 275,424, 9-4-84, Cl. D26-60.000.

American Standard Inc.: *See*—
Stairs, Henry M., Jr., 275,417, Cl. D23-65.000.

August Incorporated: *See*—
Fister, Lee H., Jr., 275,342, Cl. D6-364.000.

Bailey, Larry A. Fishing reel protective case. 275,338, 9-4-84, Cl. D3-38.000.

Barbo, Brian C.; Klein, Richard L.; Kahute, Robert M.; and Hendrickson, Thomas N., to CPAC, Inc. Fluid flow monitor for ion exchange unit that regenerates photographic developers. 275,374, 9-4-84, Cl. D10-96.000.

Battle, David, to Visual Information Institute, Inc. Pencil holder. 275,406, 9-4-84, Cl. D19-85.000.

Baus, Andre E. J., to Goodyear Tire & Rubber Company, The. Tire. 275,386, 9-4-84, Cl. D12-146.000.

Bausch & Lomb Incorporated: *See*—
Huckenbeck, Claus O., 275,400, Cl. D16-133.000.
Zancaner, Trudy H., 275,399, Cl. D16-102.000.

Bostrom, Sture, to AB Robacks Mekaniska. Concrete supply station. 275,420, 9-4-84, Cl. D25-3.000.

Boswell, Gordon H., to Mason & Porter Limited. Valved air pump. 275,395, 9-4-84, Cl. D15-9.000.

Bowater-Scott Limited: *See*—
Hall, William H., 275,345, Cl. D6-518.000.

Boyd, A. C. Tom, to Fi-Shock, Inc. Insect exterminator. 275,414, 9-4-84, Cl. D22-19.000.

Breger, Carl-Arne, to Telefonaktiebolaget L M Ericsson. Telephone instrument. 275,392, 9-4-84, Cl. D14-53.000.

Briggs, Beatrice I. E. Makeup compact. 275,425, 9-4-84, Cl. D28-78.000.

Brooks, Steven: *See*—
Dunbar, Jack G.; and Brooks, Steven, 275,341, Cl. D6-366.000.

Bronson, Sten J. Tool holder. 275,347, 9-4-84, Cl. D8-373.000.

Brown, Omar L.; and Kalter, Jack L., to Fraze, Ermal C. End closure for a container. 275,373, 9-4-84, Cl. D9-438.000.

Bryn Mawr Smokers Sundries, Inc.: *See*—
Siegel, Brent M., 275,371, Cl. D9-415.000.

Budd Company, The: *See*—
Pavlick, Michael J., 275,378, Cl. D12-41.000.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 275,375, Cl. D10-106.000.
Schwartz, Frederic W., 275,376, Cl. D10-106.000.

Carlson, Graydon S.: *See*—
Smyth, William A.; Carlson, Graydon S.; and Wilde, Harold J., 275,370, Cl. D9-415.000.

Certron Corporation: *See*—
Smyth, William A.; Carlson, Graydon S.; and Wilde, Harold J., 275,370, Cl. D9-415.000.

Chambers, Jeffrey M.: *See*—
Morrison, Howard J.; Rehkemper, Steven F.; and Chambers, Jeffrey M., 275,409, Cl. D21-2.000.

Child, Francis W. Hand knife with blade guard. 275,360, 9-4-84, Cl. D7-151.000.

Church, Rocco L., to Patco Energy, Inc. Electric room heater. 275,419, 9-4-84, Cl. D23-120.000.

Claman, Mike T. Chair. 275,343, 9-4-84, Cl. D6-57.000.

Clivio, Franco; and Raffler, Dieter, to Gardena Kress + Kastner GmbH. Sprinkler. 275,416, 9-4-84, Cl. D23-7.000.

CPAC, Inc.: *See*—
Barbo, Brian C.; Klein, Richard L.; Kahute, Robert M.; and Hendrickson, Thomas N., 275,374, Cl. D10-96.000.

Dello Russo, Patric I. Roofer's support chair. 275,422, 9-4-84, Cl. D25-68.000.

du Chambon, Henri M., to Teisseire France S.A. Bottle. 275,368, 9-4-84, Cl. D9-370.000.

Dunbar Furniture, Inc.: *See*—
Dunbar, Jack G., 275,340, Cl. D6-483.000.
Dunbar, Jack G.; and Brooks, Steven, 275,341, Cl. D6-366.000.
Dunbar, Jack G., 275,353, Cl. D6-483.000.

Dunbar, Jack G., to Dunbar Furniture, Inc. Table or similar article. 275,340, 9-4-84, Cl. D6-483.000.

Dunbar, Jack G.; and Brooks, Steven, to Dunbar Furniture, Inc. Chair or similar article. 275,341, 9-4-84, Cl. D6-366.000.

Dunbar, Jack G., to Dunbar Furniture, Inc. Desk or similar article. 275,353, 9-4-84, Cl. D6-483.000.

Durand, Philippe J. Serving bowl or similar article. 275,355, 9-4-84, Cl. D7-28.000.

Durand, Philippe J. Bowl or similar article. 275,356, 9-4-84, Cl. D7-28.000.

Durand, Philippe J. Plate or similar article. 275,357, 9-4-84, Cl. D7-28.000.

Durand, Philippe J. Plate or similar article. 275,358, 9-4-84, Cl. D7-28.000.

E. Remy Martin & Co. S.A.: *See*—
Heriard-Dubreuil, Andre J., 275,369, Cl. D9-406.000.

Edge, Leroy A., to Hotsy Corporation, The. Washer for industrial and automobile parts. 275,426, 9-4-84, Cl. D32-4.000.

Ensler, Charles E.: *See*—
Shroads, James R.; and Ensler, Charles E., 275,413, Cl. D21-234.000.

Executive Health Limited: *See*—
Silverston, Philip, 275,411, Cl. D21-191.000.

Ferguson, Arthur R.; and Stevens, Myron T., to Outboard Marine Corporation. Outboard motor. 275,394, 9-4-84, Cl. D15-4.000.

Fernandes, Fred D.; Speicher, John M.; Unkrey, Douglas W.; and Voigt, Allan A., to Versatron Research Corporation. Human powered vehicle. 275,381, 9-4-84, Cl. D12-107.000.

Fetty, Harold D.; and Smith, David E., to Goodyear Tire & Rubber Company, The. Tire. 275,387, 9-4-84, Cl. D12-147.000.

Fetty, Harold D.: *See*—
Lindner, Daniel J.; and Fetty, Harold D., 275,385, Cl. D12-146.000.

Fi-Shock, Inc.: *See*—
Boyd, A. C. Tom, 275,414, Cl. D22-19.000.

Fister, Lee H., Jr., to August Incorporated. Chair. 275,342, 9-4-84, Cl. D6-364.000.

Flowers, Francis W., Sr. Three-wheeled vehicle. 275,380, 9-4-84, Cl. D12-85.000.

Fontaine, Jean F. L.; and Graas, Maurice, to Goodyear Tire & Rubber Company, The. Tire. 275,384, 9-4-84, Cl. D12-146.000.

Forcan, Jasmina, to Levolor Lorentzen, Inc. Venetian blind color sampler packet. 275,337, 9-4-84, Cl. D3-30.100.

Foyle, John W. Desk. 275,352, 9-4-84, Cl. D6-177.000.

Fraioli, Donato M. Air-supported structure. 275,421, 9-4-84, Cl. D25-20.000.

Fraze, Ermal C.: *See*—
Brown, Omar L.; and Kalter, Jack L., 275,373, Cl. D9-438.000.

Gardena Kress + Kastner GmbH: *See*—
Clivio, Franco; and Raffler, Dieter, 275,416, Cl. D23-7.000.

Garrison, John D. Foot support for a lineman's climbing hook. 275,335, 9-4-84, Cl. D2-314.000.

Gevers, Hubert F. Microfiche. 275,398, 9-4-84, Cl. D16-26.000.

Gilberto, Anthony J.: *See*—
Price, Ira; and Gilberto, Anthony J., 275,372, Cl. D9-434.000.

Goodyear Tire & Rubber Company, The: *See*—
Baus, Andre E. J., 275,386, Cl. D12-146.000.
Fetty, Harold D.; and Smith, David E., 275,387, Cl. D12-147.000.
Fontaine, Jean F. L.; and Graas, Maurice, 275,384, Cl. D12-146.000.
Lindner, Daniel J.; and Fetty, Harold D., 275,385, Cl. D12-146.000.
Stroble, James C., 275,383, Cl. D12-136.000.

Goshi Kaisha Kanemitsu Doko Yosetsu-Sho: *See*—
Kanemitsu, Yukio, 275,365, Cl. D8-360.000.

Graas, Maurice: *See*—
Fontaine, Jean F. L.; and Graas, Maurice, 275,384, Cl. D12-146.000.

Grande, Frank A., to Hose-McCann Telephone Co. Inc. Sound power telephone. 275,393, 9-4-84, Cl. D14-56.000.

Hall, William H., to Bowater-Scott Limited. Dispenser for rolls of paper. 275,345, 9-4-84, Cl. D6-518.000.

Hashimoto, Masanori, to Ricoh Company, Ltd. Printing ribbon cassette. 275,404, 9-4-84, Cl. D18-22.000.

Hendrickson, Thomas N.: *See*—
Barbo, Brian C.; Klein, Richard L.; Kahute, Robert M.; and Hendrickson, Thomas N., 275,374, Cl. D10-96.000.

Henkels, Walter. Combined magnifier and pen holder. 275,401, 9-4-84, Cl. D16-135.000.

Herdman, Charles W. Shoelace knot retainer or similar article. 275,336, 9-4-84, Cl. D2-316.000.

Heriard-Dubreuil, Andre J., to E. Remy Martin & Co. S.A. Bottle. 275,369, 9-4-84, Cl. D9-406.000.

Hoese, Fred O. Motorcycle radio housing. 275,382, 9-4-84, Cl. D12-114.000.

Holewinski, Robert D., to Johnson & Johnson Dental Products Company. Combined shipping and storage container for dental materials or the like. 275,367, 9-4-84, Cl. D9-369.000.

Hoover Company, The: *See*—
Wareham, Richard A., 275,428, Cl. D32-22.000.

Hose-McCann Telephone Co. Inc.: *See*—
Grande, Frank A., 275,393, Cl. D14-56.000.

Hotsy Corporation, The: *See*—
Edge, Leroy A., 275,426, Cl. D32-4.000.

Huckenbeck, Claus O., to Bausch & Lomb Incorporated. Binocular. 275,400, 9-4-84, Cl. D16-133.000.

ISCAR Ltd.: *See*—
Porat, Reuven; and Tzola, Daviv, 275,396, Cl. D15-139.000.

Ishida, Kimikazu: *See*—
Ishida, Tsuneo; and Ishida, Kimikazu, 275,362, Cl. D8-5.000.
Ishida, Tsuneo; and Ishida, Kimikazu, 275,363, Cl. D8-5.000.
Ishida, Tsuneo; and Ishida, Kimikazu, 275,364, Cl. D8-5.000.

Ishida, Tsuneo; and Ishida, Kimikazu. Gardening shear. 275,362, 9-4-84, Cl. D8-5.000.

Ishida, Tsuneo; and Ishida, Kimikazu. Gardening shear. 275,363, 9-4-84, Cl. D8-5.000.

Ishida, Tsuneo; and Ishida, Kimikazu. Gardening shear. 275,364, 9-4-84, Cl. D8-5.000.

Janome Computing Center: *See*—
Kubo, Keizo, 275,403, Cl. D18-14.000.

Janome Precision Industry Co. Ltd.: *See*—
Kubo, Keizo, 275,403, Cl. D18-14.000.

Janome Sewing Machine Co. Ltd.: *See*—
Kubo, Keizo, 275,403, Cl. D18-14.000.

Jarry, Andre. Chair. 275,344, 9-4-84, Cl. D6-372.000.

Johnson & Johnson Dental Products Company: *See*—
Holewinski, Robert D., 275,367, Cl. D9-369.000.

Kaganas, Jose, to Sheepskin Autoseat Corporation. Seat cushion. 275,354, 9-4-84, Cl. D6-502.000.

Kahute, Robert M.: *See*—
Barbo, Brian C.; Klein, Richard L.; Kahute, Robert M.; and Hendrickson, Thomas N., 275,374, Cl. D10-96.000.

Kalter, Jack L.: *See*—
Brown, Omar L.; and Kalter, Jack L., 275,373, Cl. D9-438.000.

Kanemitsu, Yukio, to Goshi Kaisha Kanemitsu Doko Yosetsu-Sho. Poly-V pulley. 275,365, 9-4-84, Cl. D8-360.000.

Kiddie Products, Inc.: *See*—
Panicci, Richard L., 275,410, Cl. D21-92.000.

Kishi, Masahiro; and Yajima, Hiroshi, to Sanyo Electric Co., Ltd. Vacuum cleaner. 275,427, 9-4-84, Cl. D32-18.000.

Klein, Richard L.: *See*—
Barbo, Brian C.; Klein, Richard L.; Kahute, Robert M.; and Hendrickson, Thomas N., 275,374, Cl. D10-96.000.

Kubo, Keizo, to Janome Sewing Machine Co. Ltd.; Janome Computing Center; and Janome Precision Industry Co. Ltd. Imprinter. 275,403, 9-4-84, Cl. D18-14.000.

La Salle, Alan: *See*—
Stansbury, Benjamin H., Jr.; and La Salle, Alan, 275,423, Cl. D26-38.000.

Levolor Lorentzen, Inc.: *See*—
Forcan, Jasmina, 275,337, Cl. D3-30.100.

Lindner, Daniel J.; and Fetty, Harold D., to Goodyear Tire & Rubber Company, The. Tire. 275,385, 9-4-84, Cl. D12-146.000.

Lutz, Jerome A. Passenger rail vehicle. 275,377, 9-4-84, Cl. D12-40.000.

Makino, Shinji: *See*—
Takanaga, Mitsuo; Nagata, Kazuhiko; Makino, Shinji; and Takaichi, Yoshihisa, 275,389, Cl. D14-6.000.

Maloney, Michael J. Locking label-holding hanger device. 275,408, 9-4-84, Cl. D20-43.000.

Manos, George. Omelette pan. 275,361, 9-4-84, Cl. D7-357.000.

Marvin Glass & Associates: *See—*
Morrison, Howard J.; Rehkemper, Steven F.; and Chambers, Jeffrey M., 275,409, Cl. D21-2.000.
Mason & Porter Limited: *See—*
Boswell, Gordon H., 275,395, Cl. D15-9.000.
Matsuo, Mototsugu. Apparatus for welding textile goods by heat. 275,397, 9-4-84, Cl. D13-144.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Takanaga, Mitsuo; Nagata, Kazuhiko; Makino, Shinji; and Takaichi, Yoshihisa, 275,389, Cl. D14-6.000.
Mattel, Inc.: *See—*
Stansbury, Benjamin H., Jr.; and La Salle, Alan, 275,423, Cl. D26-38.000.
Maxwell, Robert A. Packaging container for frozen aquarium foods. 275,366, 9-4-84, Cl. D9-341.000.
McCarthy, Alfred F., to Aavid Engineering, Inc. Unsymmetrical heat sink for electronic devices. 275,388, 9-4-84, Cl. D13-23.000.
McKinnon, Eugene T. Tester case. 275,339, 9-4-84, Cl. D3-72.000.
Morrison, Howard J.; Rehkemper, Steven F.; and Chambers, Jeffrey M., to Marvin Glass & Associates. Ball game housing. 275,409, 9-4-84, Cl. D21-2.000.
Nagata, Kazuhiko: *See—*
Takanaga, Mitsuo; Nagata, Kazuhiko; Makino, Shinji; and Takaichi, Yoshihisa, 275,389, Cl. D14-6.000.
O'Brien, Gerard T. Music book page turner. 275,402, 9-4-84, Cl. D17-99.000.
Olsen, Christer: *See—*
Ahlovist, Claes; and Olsen, Christer, 275,415, Cl. D23-2.000.
Olson, George E. Shelf for displaying model train. 275,348, 9-4-84, Cl. D6-574.000.
Outboard Marine Corporation: *See—*
Ferguson, Arthur R.; and Stevens, Myron T., 275,394, Cl. D15-4.000.
Padgett, John B. Gun rack. 275,346, 9-4-84, Cl. D6-552.000.
Panicci, Richard L., to Kiddie Products, Inc. Spinning suction toy. 275,410, 9-4-84, Cl. D21-92.000.
Patco Energy, Inc.: *See—*
Church, Rocco L., 275,419, Cl. D23-120.000.
Pavlick, Michael J., to Budd Company, The. Articulated railway hopper car. 275,378, 9-4-84, Cl. D12-41.000.
Porat, Reuven; and Tzola, Daviv, to ISCAR Ltd. Cutting insert for tool holder. 275,396, 9-4-84, Cl. D15-139.000.
Price, Ira; and Gilberto, Anthony J. Bag resealing clamp or similar article. 275,372, 9-4-84, Cl. D9-434.000.
Pullin, Fred L. Hard hat with solar-powered cooling means. 275,334, 9-4-84, Cl. D2-231.000.
Raffler, Dieter: *See—*
Clivio, Franco; and Raffler, Dieter, 275,416, Cl. D23-7.000.
Rehkemper, Steven F.: *See—*
Morrison, Howard J.; Rehkemper, Steven F.; and Chambers, Jeffrey M., 275,409, Cl. D21-2.000.
Ricoh Company, Ltd.: *See—*
Hashimoto, Masanori, 275,404, Cl. D18-22.000.
Sanyo Electric Co., Ltd.: *See—*
Kishi, Masahiro; and Yajima, Hiroshi, 275,427, Cl. D32-18.000.
Schwartz, Frederic W., to Cable Electric Products, Inc. Portable security alarm. 275,375, 9-4-84, Cl. D10-106.000.
Schwartz, Frederic W., to Cable Electric Products, Inc. Burglar and smoke travel alarm. 275,376, 9-4-84, Cl. D10-106.000.
Sheepskin Autoseat Corporation: *See—*
Kaganas, Jose, 275,354, Cl. D6-502.000.
Shibata, Masamitsu; and Yamamoto, Hiroshi, to Victor Company of Japan, Limited. Video tape recorder. 275,390, 9-4-84, Cl. D14-2.000.
Shroads, James R.; and Ensler, Charles E. Golf driving platform. 275,413, 9-4-84, Cl. D21-234.000.
Siegel, Brent M., to Bryn Mawr Smokers Sundries, Inc. Display package. 275,371, 9-4-84, Cl. D9-415.000.
Silverston, Philip, to Executive Health Limited. Physical exerciser. 275,411, 9-4-84, Cl. D21-191.000.
Simmons, Samuel P. Golf club head. 275,412, 9-4-84, Cl. D21-214.000.
Smith, Albert E. Combined clock and advertising display. 275,407, 9-4-84, Cl. D20-20.000.
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ISSUED SEPTEMBER 4, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

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199 4,469,307
350 4,469,308

CLASS 260

112 B 4,469,630
112.5 E 4,469,631
112.5 T 4,469,632
239 BB 4,469,633
4,469,634
403 4,469,635
414 4,469,636
429.3 4,469,637
439 CY 4,469,638
448 C 4,469,639
453 P 4,469,640
458 F 4,469,641
465 D 4,469,642
502.5 G 4,469,643
985 4,469,644

CLASS 264

1.6 4,469,645
2.2 4,469,646
3 C 4,469,647
9 4,469,648
23 4,469,649
27 4,469,650
40.6 4,469,651
40.7 4,469,652
51 4,469,653
62 4,469,654
82 4,469,655
87 4,469,656
328.6 4,469,657

CLASS 266

44 4,469,309
56 4,469,310
67 4,469,311
99 4,469,312
207 4,469,313
252 4,469,314

CLASS 267

64.17 4,469,315
140.1 4,469,316

CLASS 269

69 4,469,317
91 4,469,318

CLASS 271

3.1 4,469,319
98 4,469,320
183 4,469,321
264 4,469,322
288 4,469,323

CLASS 272

70 4,469,324
72 4,469,325
134 4,469,326

CLASS 273

1 GG 4,469,327
22 4,469,328
146 4,469,329
148 B 4,469,330
157 R 4,469,331

CLASS 277

12 4,469,332
4,469,333
4,469,334
27 4,469,335
92 4,469,336
212 FB 4,469,337
236 4,469,338

CLASS 280

5 A 4,469,339
4,469,340
47.26 4,469,341
148 4,469,342
261 4,469,343
269 4,469,344
289 A 4,469,345
414.1 4,469,346
432 4,469,347
475 4,469,348
665 4,469,349
675 4,469,350
806 4,469,351
808 4,469,352

CLASS 283

74 4,469,353

CLASS 285

2 4,469,354
332 4,469,356
381 4,469,357

CLASS 290

1 A 4,469,954
53 4,469,955
55 4,469,956

CLASS 292

288 4,469,358
4,469,359

CLASS 293

102 4,469,360

CLASS 294

19 R 4,469,361
116 4,469,362
154 4,469,363

CLASS 296

37.6 4,469,364
37.7 4,469,365
97 A 4,469,366
97 K 4,469,367
188 4,469,368
197 4,469,369
218 4,469,370
223 4,469,371

CLASS 297

5 4,469,372
174 4,469,373
284 4,469,374
362 4,469,375
4,469,376
464 4,469,377

CLASS 303

22 R 4,469,378

CLASS 305

35 EB 4,469,379

CLASS 307

200 A 4,469,957
246 4,469,958
264 4,469,959
4,469,960
270 4,469,961
450 4,469,962
477 4,469,963
481 4,469,964
530 Re.31,662
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CLASS 308

6 C 4,469,380
174 4,469,381

CLASS 310

62 4,469,966
71 4,469,967
105 4,469,968
154 4,469,969
156 4,469,970
214 4,469,971
233 4,469,972
254 4,469,965
258 4,469,973
316 4,469,974
321 4,469,975
334 4,469,976
4,469,977
366 4,469,978
370 4,469,979

CLASS 312

219 4,469,382
296 4,469,383
333 4,469,384

CLASS 313

25 4,469,980
293 4,469,982
318 4,469,983
348 4,469,984
366 4,469,985
610 4,469,986

CLASS 315

14 4,469,987
205 4,469,981
209 R 4,469,988
241 P 4,469,989
4,469,990
246 4,469,991
371 4,469,992

CLASS 318

561 4,469,993
591 4,469,994
685 4,469,995
696 4,469,996
729 4,469,997
4,469,998
798 4,469,999
805 4,470,000
810 4,470,001

CLASS 320

1 4,470,002

CLASS 322

23 4,470,003
99 4,470,004

CLASS 323

210 4,470,005
307 4,470,006

CLASS 324

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61 R 4,470,008
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168 4,470,012
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329 4,470,015
402 4,470,016

CLASS 328

116 4,470,017
133 4,470,018
144 4,470,019

CLASS 330

304 4,470,020

CLASS 331

56 4,470,021
78 4,470,022
107 S 4,470,023
108 D 4,470,024
178 4,470,025

CLASS 333

194 4,470,026

CLASS 335

16 4,470,027
4,470,028
210 4,470,029
228 4,470,030
284 4,470,031
288 4,470,032

CLASS 337

343 4,470,033

CLASS 338

332 4,470,034

CLASS 339

14 R 4,469,385
37 4,469,386
42 4,469,387
45 M 4,469,388
75 MP 4,469,389
95 R 4,469,390

97 R 4,469,391
117 R 4,469,392
198 GA 4,469,393
221 R 4,469,394
278 C 4,469,395

CLASS 340

52 R 4,470,035
66 4,470,036
365 R 4,470,037
365 S 4,470,038
514 4,470,039
566 4,470,040
644 4,470,041
721 4,470,042
722 4,470,043
755 4,470,044
783 4,470,045
825.23 4,470,046
825.36 4,470,047

CLASS 343

5 SA 4,470,048
17.1 R 4,470,049
766 4,470,050

CLASS 346

74.5 4,470,051
75 4,470,052
135.1 4,470,053
137 4,470,054
140 R 4,470,055
154 4,470,056
209 4,470,057
212 4,470,058

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96.15 4,469,397
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432 4,469,413
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517 4,469,415

CLASS 351

206 4,469,416

CLASS 354

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153 4,469,420
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286 4,469,422
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310 4,469,425
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447 4,469,426

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3 CH 4,469,428
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67 4,470,063

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171 4,470,066
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261 4,470,073
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302 4,470,075
312 4,470,076
335 4,470,077
342 4,470,078

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10.2 4,470,079
15 4,470,084
30 4,470,080
43 4,470,081
51 4,470,082
72.1 4,470,085
85 4,470,086
97 4,470,083
105 4,470,087
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137 4,470,089

CLASS 361

19 4,470,090
20 4,470,091
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415 4,470,101
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211 4,470,104
396 4,470,105
398 4,470,106

CLASS 364

140 4,470,107
167 4,470,108
200 4,470,109
4,470,110
4,470,111
4,470,112
4,470,113
4,470,114
300 4,470,115
424 4,470,116
424.1 4,470,117
431.02 4,470,118
449 4,470,119
507 4,470,120
508 4,470,121
559 4,470,122
563 4,470,123
571 4,470,124
760 4,470,125
825 4,470,126
900 4,470,127
4,470,128
4,470,129

CLASS 365

2 4,470,131
43 4,470,132
227 4,470,133

CLASS 366

144 4,469,444
300 4,469,445
342 4,469,446

CLASS 367

188 4,470,134

CLASS 368

65 4,469,447
196 4,469,448
239 4,469,449

CLASS 369

11 4,470,135
77.1 4,470,136
100 4,470,137
230 4,470,130

CLASS 370

18 4,470,138
66 4,470,139
86 4,470,140
104 4,470,141

CLASS 371

2 4,470,142

CLASS 372

50 4,470,143
61 4,470,144

CLASS 374

119 4,469,450
136 4,469,451
160 4,469,452

CLASS 375

1 4,470,145
30 4,470,146
77 4,470,147
113 4,470,148

CLASS 377

2 4,470,149

CLASS 381

52 4,470,150

CLASS 382

44 4,470,151

CLASS 383

37 4,470,152
100 4,470,153

CLASS 384

117 4,469,453

CLASS 400

144.2 4,469,454
171 4,469,455
194 4,469,456
208 4,469,457
B1 4,047,608
214 4,469,458
216.1 4,469,459
322 4,469,460
473 4,469,461

CLASS 401

107 4,469,462
134 4,469,463
183 4,469,464

CLASS 403

282 4,469,465
388 4,469,466

CLASS 404

25 4,469,467

CLASS 405

157 4,469,468
4,469,469

CLASS 415

115 4,469,470

CLASS 417

50 4,469,471
61 4,469,472
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CLASS 418

217 4,469,474

CLASS 419

9 4,469,658

CLASS 422

4 D 4,469,050
46 4,469,659
70 4,469,660

CLASS 423

210.5 4,469,661
235 4,469,662
242 4,469,663
244 4,469,664
359 4,469,665
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447.1 4,469,667
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594 4,469,669
599 4,469,670

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50 4,469,673
52 4,469,674
78 4,469,675
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95 4,469,676
164 4,469,678
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178 4,469,681
180 4,469,682
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181 4,469,684
195 4,469,685
200 4,469,686
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210 4,469,688
243 4,469,689
244 4,469,690
249 4,469,691
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250 4,469,693
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253 4,469,698
263 4,469,699
265 4,469,700
267 4,469,701
308 4,469,702
311 4,469,703
312 4,469,704
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330 4,469,706
4,469,707

CLASS 425

132 4,469,475
216 4,469,476

CLASS 426

103 4,469,708
231 4,469,709
541 4,469,710
557 4,469,711
579 4,469,712

CLASS 427

10 4,469,713
54.1 4,469,714
4,469,724
74 4,469,715
96 4,469,716
102 4,469,717
120 4,469,718
255.5 4,469,719
345 4,469,720
397.8 4,469,721
423 4,469,722
437 4,469,723

CLASS 428

13 4,469,725
4,469,726
31 4,469,727
36 4,469,728
4,469,729
4,469,730
68 4,469,731
80 4,469,732
109 4,469,733
134 4,469,734
154 4,469,735
159 4,469,736
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212 4,469,740
214 4,469,741
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246 4,469,744
283 4,469,745
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325 4,469,747
378 4,469,748
403 4,469,749
447 4,469,750
4,469,751
475.8 4,469,752
4,469,753
476.3 4,469,754
542.8 4,469,755
592 4,469,756
614 4,469,757
693 4,469,758

CLASS 429

10 4,469,759
21 4,469,760
50 4,469,761
51 4,469,762
86 4,469,764
101 4,469,763
123 4,469,765

CLASS 430

23 4,469,766
31 4,469,767
58 4,469,768
78 4,469,769
110 4,469,770
126 4,469,771
163 4,469,772
222 4,469,773
270 4,469,774
273 4,469,775
309 4,469,776
315 4,469,777
325 4,469,778
363 4,469,779
373 4,469,780
393 4,469,781
502 4,469,782
567 4,469,783
4,469,784
572 4,469,785

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5 4,469,786
7 4,469,787
18 4,469,788
23 4,469,789
68 4,469,790
253 4,469,791

CLASS 436

11 4,469,792
45 4,469,793
127 4,469,794
504 4,469,795
518 4,469,796
536 4,469,797

CLASS 446

462 4,468,884

CLASS 455

607 4,470,154

CLASS 474

80 4,469,478
4,469,479

CLASS 501

14 4,469,798
32 4,469,799
43 4,469,800
96 4,469,801
4,469,802

CLASS 502

25 4,469,803
32 4,469,804
33 4,469,805
62 4,469,806
74 4,469,807
101 4,469,808
117 4,469,809
209 4,469,810
227 4,469,811
230 4,469,812
263 4,469,813
4,469,814
303 4,469,815
333 4,469,816

CLASS 521

45 4,469,817
64 4,469,818
79 4,469,819
125 4,469,820
131 4,469,821
167 4,469,822
172 4,469,823
173 4,469,824

CLASS 523

201 4,469,825
339 4,469,826

CLASS 524

27 4,469,827
100 4,469,828
103 4,469,829
109 4,469,830
112 4,469,831
160 4,469,832
161 4,469,833
193 4,469,834
349 4,469,835
376 4,469,836
388 4,469,837
394 4,469,838
458 4,469,839
500 4,469,840
512 4,469,841
593 4,469,842

CLASS 525

67 4,469,843
71 4,469,844
4,469,845
72 4,469,846
89 4,469,847
339 4,469,849
439 4,469,850
444 4,469,851
468 4,469,852

CLASS 526

59 4,469,853
91 4,469,854
106 4,469,855

CLASS 528

45 4,469,856
59 4,469,857
129 4,469,858
159 4,469,859
196 4,469,860
4,469,861
271 4,469,862

CLASS 536

27 4,469,863
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CLASS 544

14 4,469,866
222 4,469,867
251 4,469,868

CLASS 546

198 4,469,869
199 4,469,870
249 4,469,871
302 4,469,872
344 4,469,873

CLASS 548

341 4,469,865
475 4,469,874
532 4,469,875
535 4,469,876

CLASS 549

13 4,469,864
21 4,469,877
248 4,469,878
465 4,469,879
532 4,469,880

CLASS 556

453 4,469,881

CLASS 560

25 4,469,882
131 4,469,883
160 4,469,884

CLASS 562

459 4,469,885
522 4,469,886
599 4,469,887

CLASS 564

109 4,469,888
254 4,469,889
417 4,469,890

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031 4,469,891
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437 4,469,894
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495 4,469,896
650 4,469,897
683 4,469,898
768 4,469,899
774 4,469,900
781 4,469,901
812 4,469,902
899 4,469,905
918 4,469,903
948 4,469,904

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467 4,469,908
481 4,469,909
511 4,469,910
515 4,469,911
525 4,469,912
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67 4,469,481
187 4,469,482
280 4,469,483
321 4,469,484

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	314	275,335
	316	275,336
D3—	30.1	275,337
	38	275,338
	72	275,339
D6—	57	275,343
	177	275,352
	364	275,342
	366	275,341
	372	275,344
	426	275,349
	446	275,350
		275,351
	483	275,340
		275,353
	502	275,354
	518	275,345
	552	275,346
	574	275,348
D7—	28	275,355
		275,356
		275,357
		275,358
	99	275,359
	151	275,360
	357	275,361
D8—	5	275,362
		275,363
		275,364
	360	275,365
	373	275,347
D9—	341	275,366
	369	275,367
	370	275,368
	406	275,369
	415	275,370
		275,371
	434	275,372
	438	275,373
D10—	96	275,374
	106	275,375
		275,376
D12—	40	275,377
	41	275,378
	85	275,379
		275,380
	107	275,381
	114	275,382
	136	275,383
	146	275,384
		275,385
		275,386
	147	275,387
D13—	23	275,388
D14—	2	275,390
	5	275,391
	6	275,389
	53	275,392
	56	275,393
D15—	4	275,394
	9	275,395
	139	275,396
	144	275,397
D16—	26	275,398
	102	275,399
	133	275,400
	135	275,401
D17—	99	275,402
D18—	14	275,403
	22	275,404
D19—	64	275,405
	85	275,406
D20—	20	275,407
	43	275,408
D21—	2	275,409
	92	275,410
	191	275,411
	214	275,412
	234	275,413
D22—	19	275,414
D23—	2	275,415
	7	275,416
	65	275,417
	71	275,418
	120	275,419
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